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A guide to future physical plant development is outlined for Michigan Technological University, Houghton Campus. Consideration is given to the existing campus situation, concept development, plan description, and the development plan which is included as an insert. (RK)

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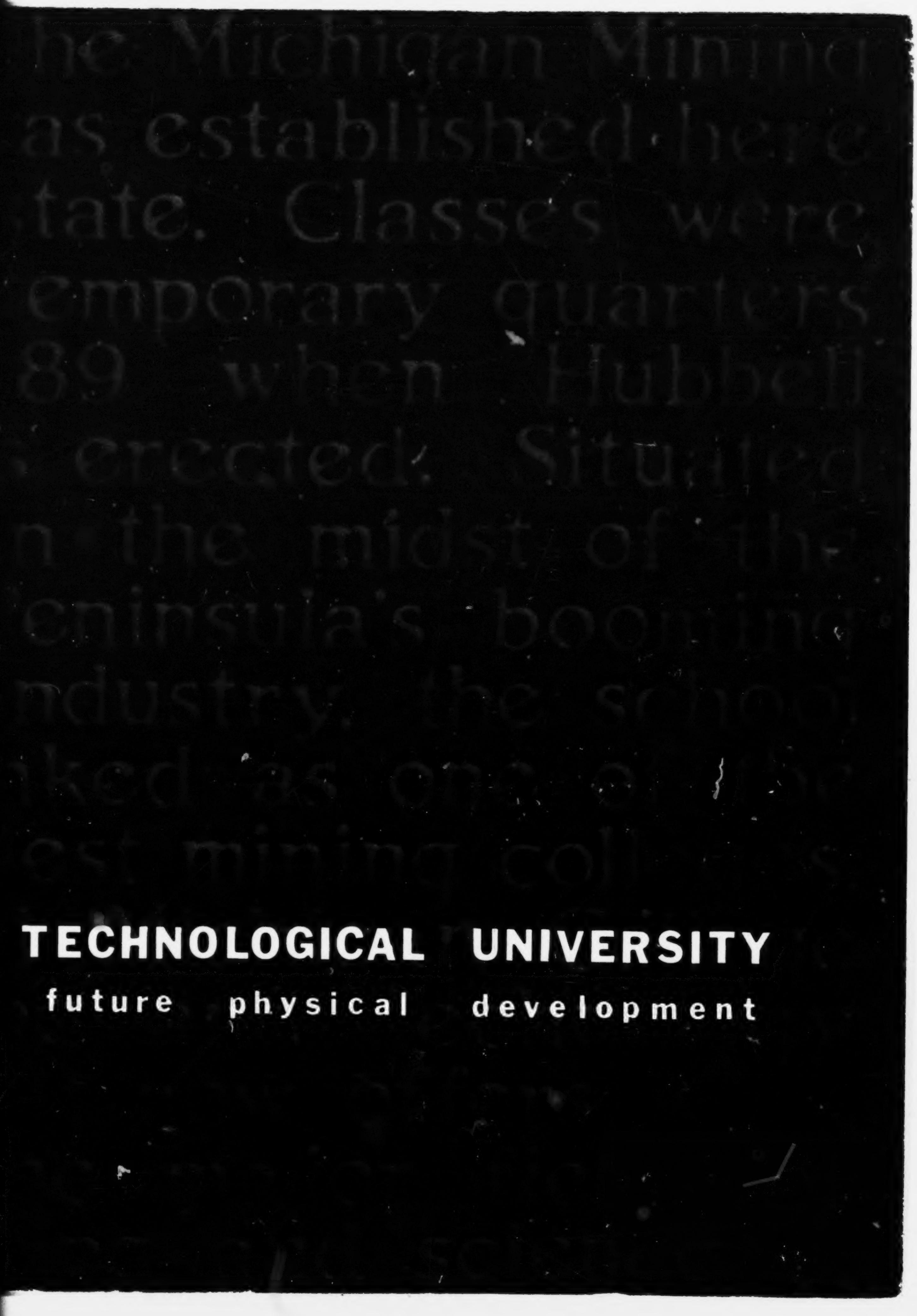
future physical development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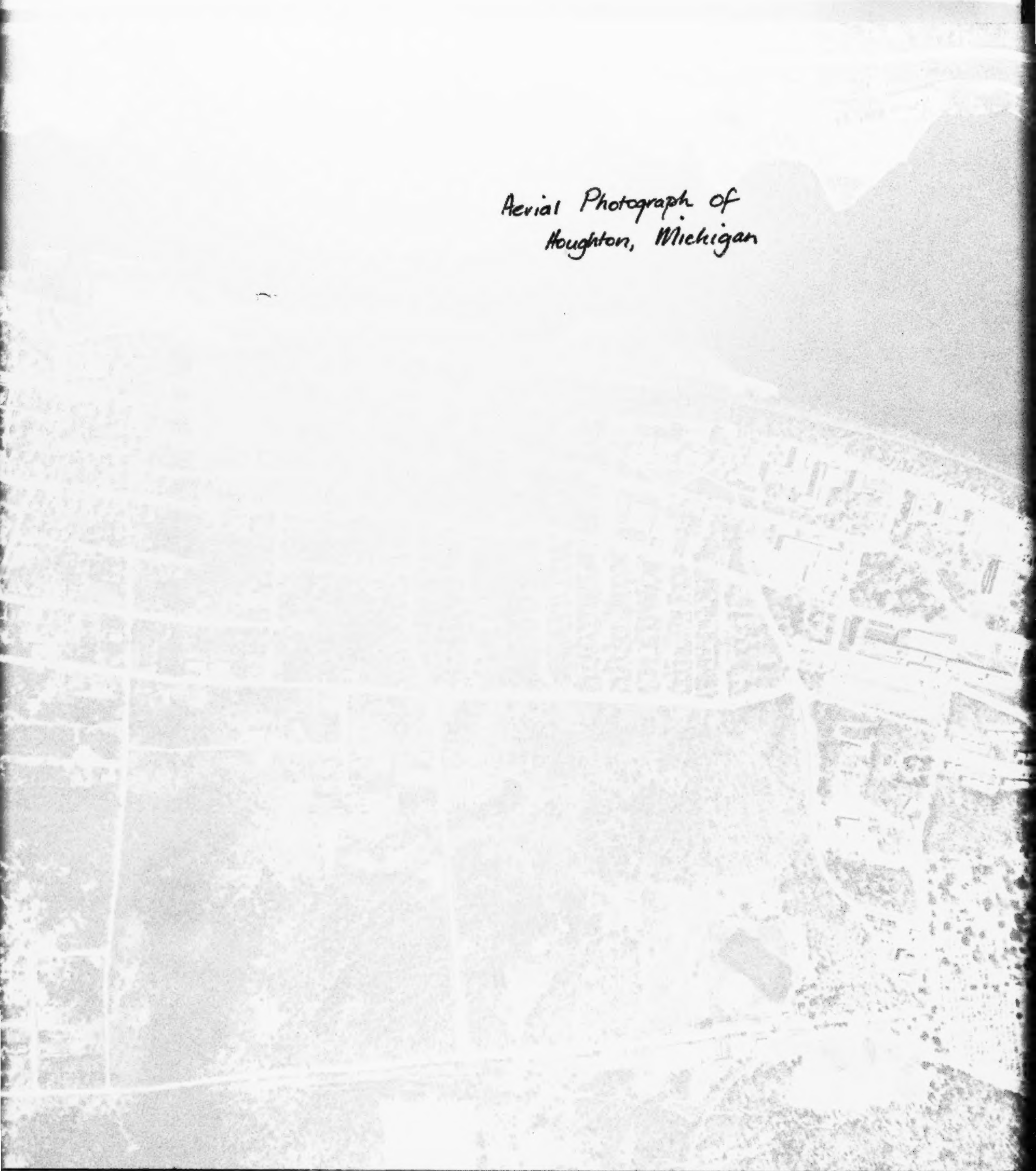

Aerial Photograph of
Houghton, Michigan

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MICHIGAN TECHNOLOGICAL UNIVERSITY

a guide to future physical development

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MICHIGAN TECHNOLOGICAL UNIVERSITY
HOUGHTON, MICHIGAN 49931
Area Code 906, 482-1600

June 6, 1966

Michigan Technological University is dedicated to the highest academic standards. The primary objective of the University is to maintain a character of basic engineering and science education, balanced by humanities and business programs and balanced also by graduate and undergraduate curricula. Our primary concern is for the education of our youth, yet Michigan Tech recognizes an obligation to help the State of Michigan retain its place as a leader in the nation's economy. At Michigan Tech the technological emphasis is carried into the University's research and community service programs.

It is essential that a re-examination of the University's operation be made periodically in order to establish whether objectives are well delineated and if the methods used to attain them can be improved. Questions must be asked, such as—are teaching methods adequate? Should the institution's limited resources be applied toward new programs, or toward strengthening already established programs? What improvements must be made in such areas as student services, research, physical plant? There are many questions to be answered and problems to be solved. Solutions for these problems will change with time. However, the one thing that should not change, except after the passage of many years, is the basic objective of the institution.

Michigan Tech is currently determining some of the answers to these difficult questions, and in doing so, is deeply involved in predicting and planning its future. Problems such as growth, general character, campus development, ultimate size, types of programs and financial requirements, are receiving primary consideration.

The physical plant development plan outlined in this booklet has been made possible by funds provided in Public Act 124 adopted by the Legislature of Michigan. It is the result of studies at the University, discussions and conferences about the future needs and plans, combined with concern about our basic objectives. We at Michigan Tech do realize that the future is not always predictable, and that many of our plans and predictions will have to be continually modified with the changing times. However, we believe it is essential at this critical point in Tech's history, to define our objectives and set realistic intermediate goals.

R. L. Smith

President

June 6, 1966

This report documents a study authorized by the Board of Control of Michigan Technological University to determine guidelines for the future physical growth of the Houghton campus. It does not indicate a final plan nor terminate the planning process. Planning is a continuous activity and requires persistent efforts to meet the changing and unanticipated future for which it is intended.

It is this characteristic of continuity of planning efforts which identifies and measures the value of this report. In order that future decisions may be made with full knowledge of their implications upon the physical growth of the campus, the reasons and sense behind the plan must be clearly understood. In this respect, this document of the planning process far exceeds in importance the plan itself.

Respectfully submitted,

Clarence Roy

JOHNSON, JOHNSON & ROY, inc.
landscape architects
210 E. Huron Street
Ann Arbor, Michigan

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south 37

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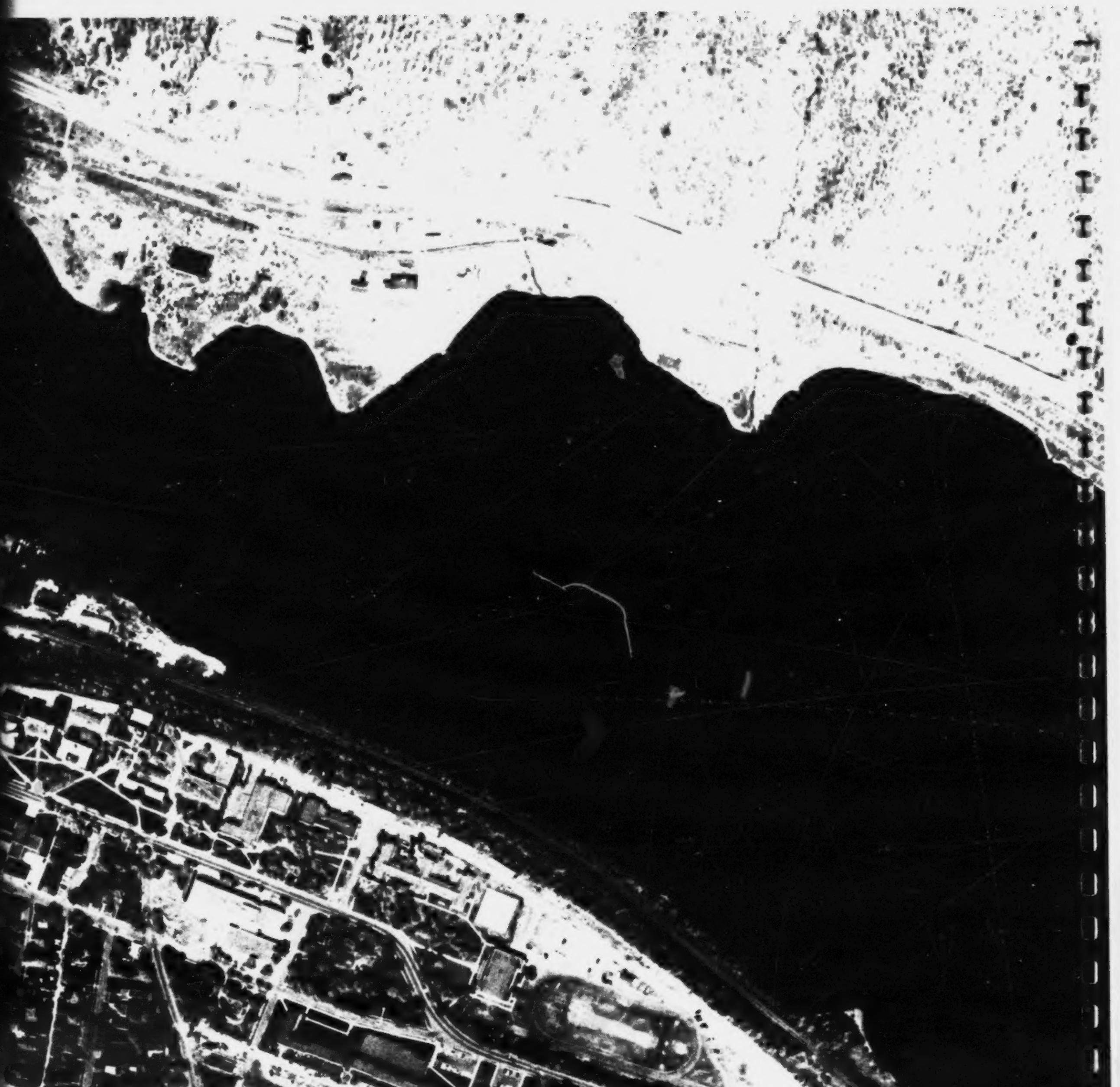
Campus Development Plan

insert—back cover

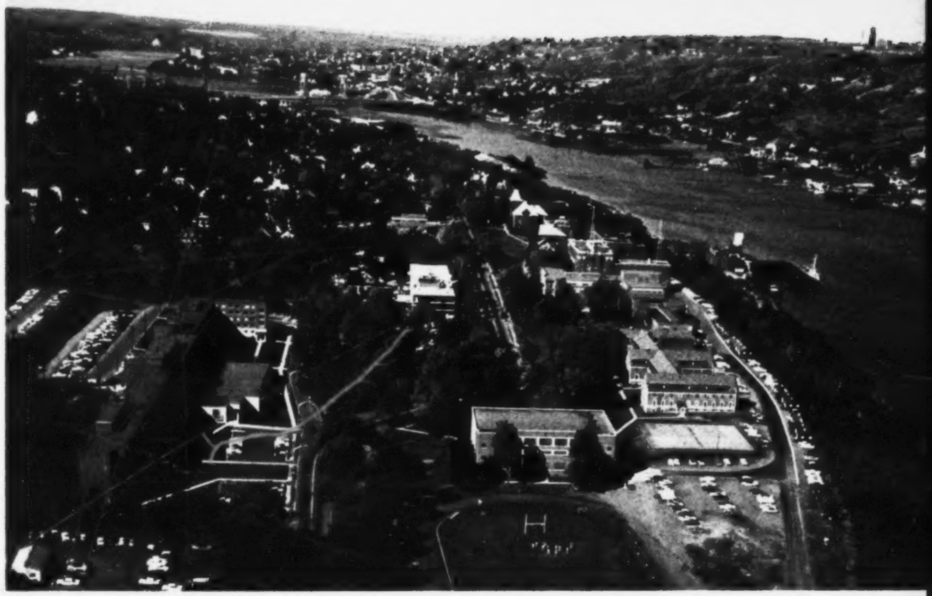
EXISTING SITUATION

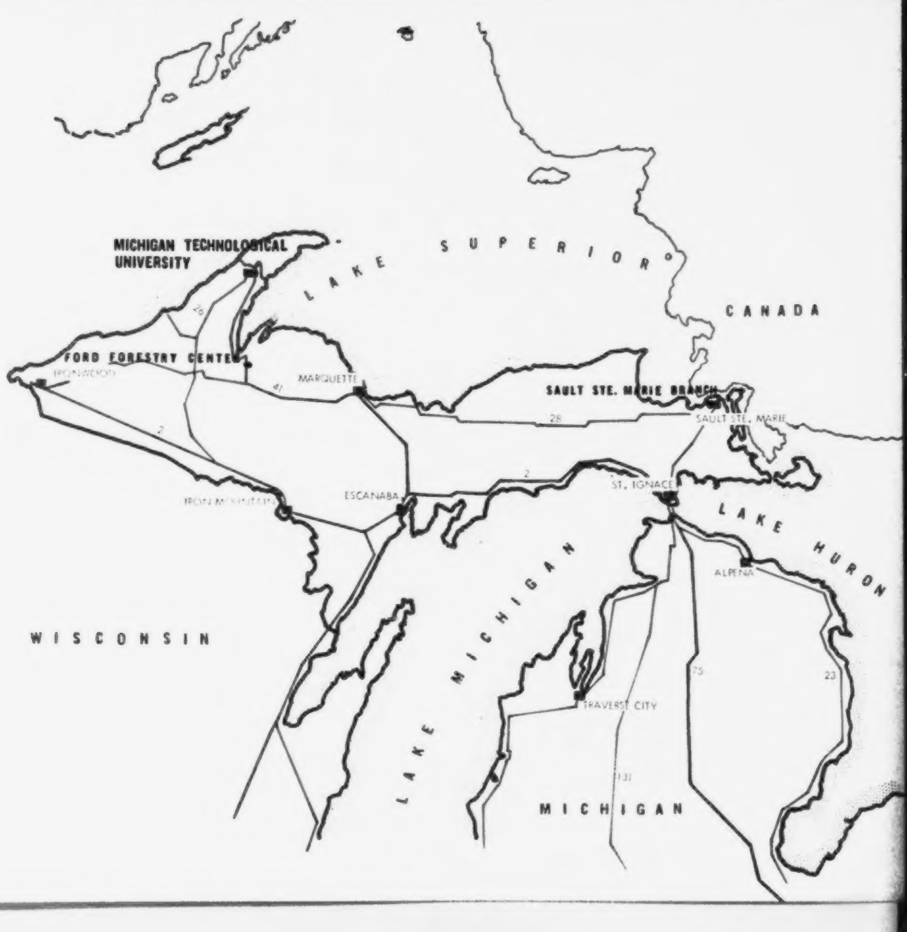


One of the most scenic attractions in Michigan's Upper Peninsula is the valley of Portage Lake. Connecting to Lake Superior on each side of the Keweenaw Peninsula, the valley intersects the geologic and topographic structure of the Copper Country. Halfway up the south slope at a point near where the Keweenaw waterway widens into a more expansive body of water, a shelf of land parallels the valley for a distance of 4,000 feet. This shelf, geologically a glacial lake terrace, is the site of the Houghton campus of Michigan Technological University.

With a current student body of more than 3,500, the campus has a limited expansion potential. Projected enrollments three times the present number are a serious concern of the University. Aware of the probable growth and the expected demands to be placed upon all state-supported institutions of higher learning, and with a desire to expand and improve its own role in meeting those needs, the administration has submitted its physical commitments and requirements to a careful examination in an effort to establish appropriate guidelines for future physical development.

Portage Lake valley




MICHIGAN TECHNOLOGICAL UNIVERSITY
LAKE SUPERIOR
CANADA
FORD FORESTRY CENTER
IRONWOOD
MARQUETTE
41
26
SAULT STE. MARIE BRANCH
SAULT STE. MARIE
28
2
2
IRON MOUNTAIN
ESCANABA
ST. IGNACE
LAKE HURON
ALPENA
WISCONSIN
LAKE MICHIGAN
75
23
TRAVERSE CITY
131
MICHIGAN

aerial photograph of Michigan Technological University

Michigan Mining School, 1886

historical background

A growing need for competent engineers to direct operations in the copper mining activities of the Upper Peninsula led to the establishment of the Michigan Mining School at Houghton in 1885. Organized to train mining engineers, metallurgists and geologists and dedicated to providing a thorough liberal education in preparation for this professional training, the mining school held its first classes (twenty-three students, four faculty) in 1886 and graduated its first class (seven students) in 1888. Since that time, it has grown in service, size and stature. It was the first American engineering college to incorporate a "free elective" system into its curriculum.

The name was changed to Michigan College of Mines in 1897. In 1927 the school became the Michigan College of Mining and Technology in response to the demand of expanding industries for engineers and scientists. Physical expansion has included the opening of a branch campus at Sault Ste. Marie in 1946 and a research center at the Ford Forestry Center, Alberta, Michigan, in 1954. The transition from mining school to university has continued through the years with the growth of graduate degree programs and research activity and the addition of ROTC, continuing education and a broader range of academic instruction. Today, with more than 3,500 students on the Houghton campus, bachelor's degrees are offered in nineteen areas, master's degrees in sixteen and doctor's degrees in four. Its present name, Michigan Technological University, effective 1 January 1964, in no way limits the growth and development that undoubtedly will continue into the future.

Emphasis upon technology of a highly professional character balanced with the study of humanities and business administration is a characteristic unique to Michigan Tech which it is pledged to continue as it adapts to the changing needs of the future.

Hubbell Hall, built 1889

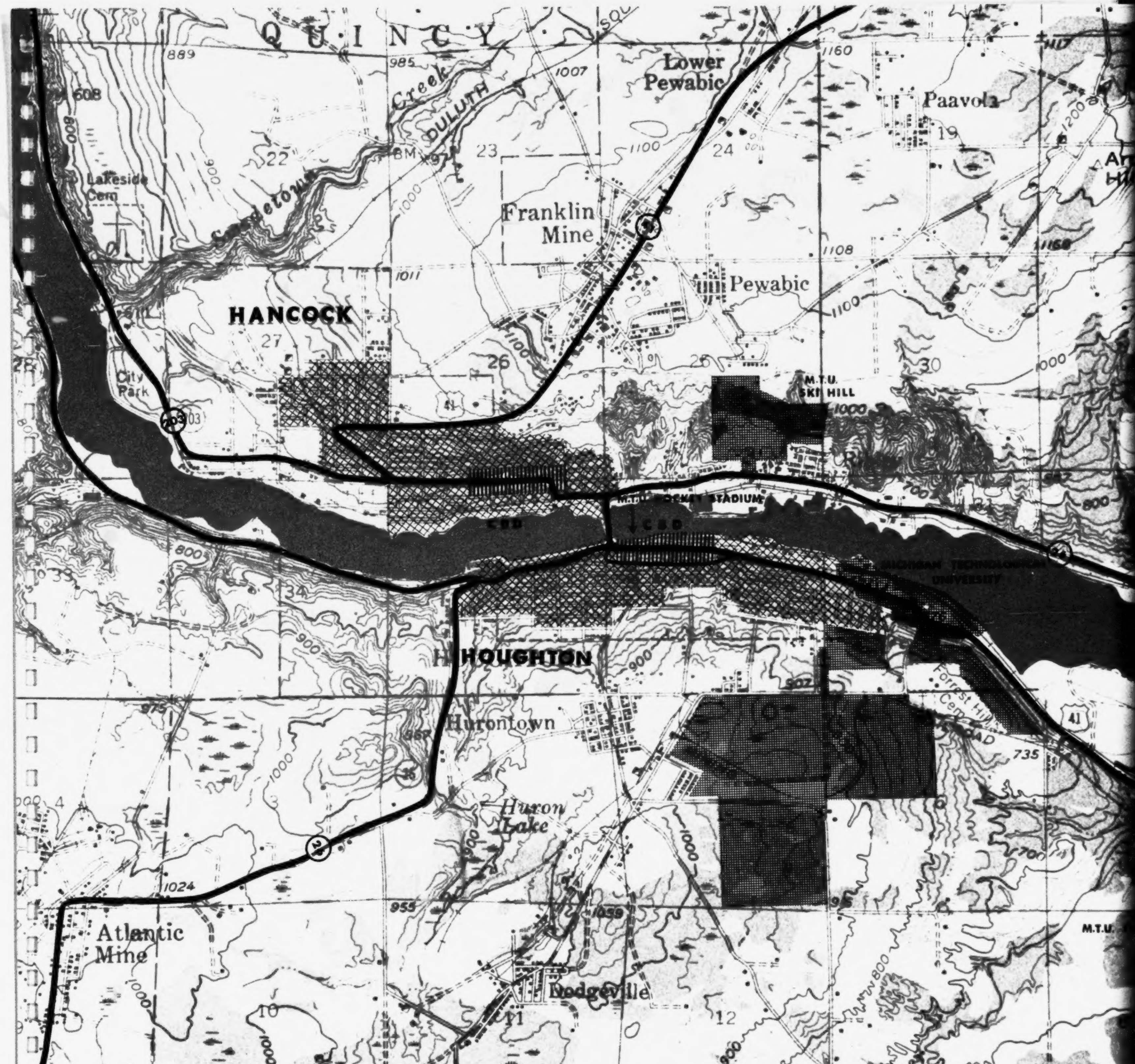
community considerations

Forming a distinctly identifiable topographical feature, the Portage Lake valley is the focus of development of the communities of Houghton and Hancock built along its south and north edges, respectively. Michigan Highway 26, approaching the valley from the central ridge of hills that form the spine of the Keweenaw, breaks over the southern edge of the valley and descends to the bridge and across the waterway to Hancock and north to Keweenaw County. U.S. Highway 41 parallels the south shore of Portage Lake and enters the Houghton-Hancock community through the campus.

Early stages of campus development were determined by US-41, when it was a definite asset and attraction. Subsequent growth of University activity on both sides of the highway and greatly increased highway traffic volume have resulted in conflicts detrimental to future campus growth and dangerous to safe pedestrian movement. The need to relocate the highway has been expressed by the Michigan State Highway Department.

Economically identified with the Copper Country, the University is physically related to the Village of Houghton with each dependent upon the other for various services and facilities. This interdependence is beneficial to both and should be emphasized and exploited in future University and community planning. Facilities that are common to both, or those provided by one for the benefit of the other, would form an appropriate edge to the campus and achieve a compatible blend between the two. Of particular concern is that portion of the community on the slopes between the present campus and the University's lands to the south, which provide unique opportunities for the development of community/University relationships.

COMMUNITY CONSIDERATIONS


QUINCY
Lower Pewabic
Paavola
Franklin Mine
Pewabic
HANCOCK
Lakeside Cem
City Park
Creek
DULUTH
M.T.U. SKI HILL
M.T.U. HOCKEY STADIUM
CBD
CBD
MICHIGAN TECHNOLOGICAL UNIVERSITY
HOUGHTON
Hurontown
Forrest Hill Cem
Huron Lake
Atlantic Mine
Dodgeville
Isle Royale Sch
Superior
River
Pilgrim
NORTH
MILES
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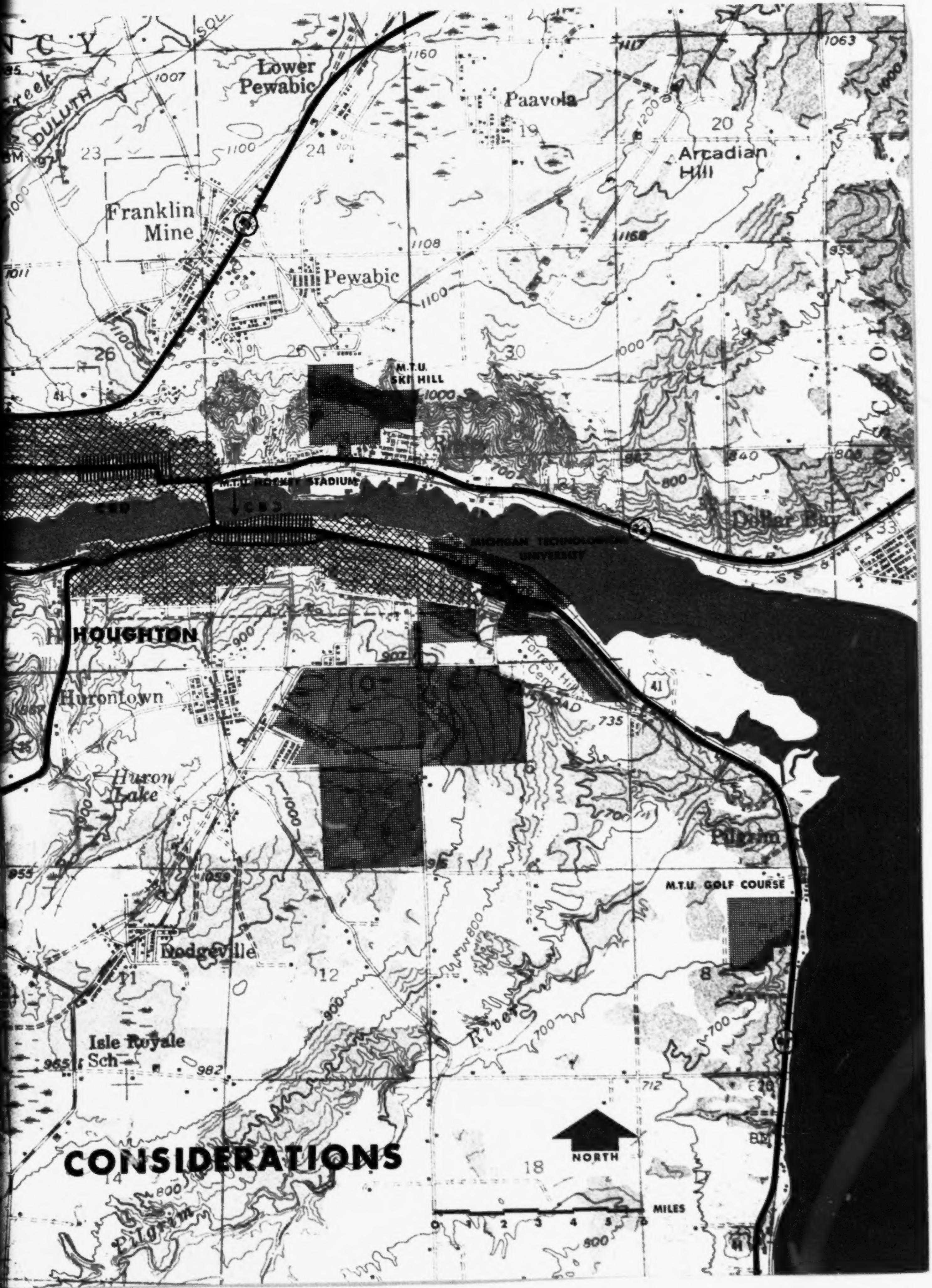
4
5

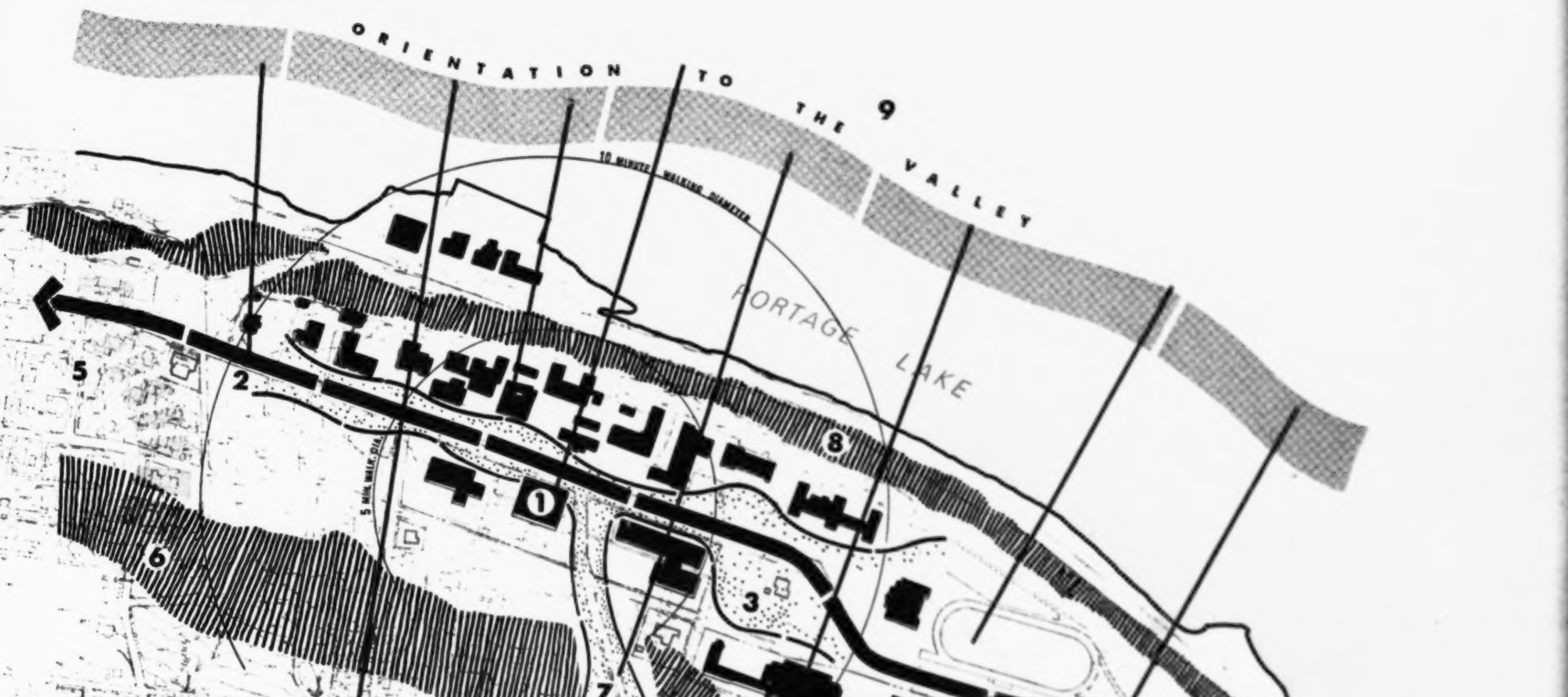
CONSIDERATIONS


Lower Pewabic
Paavola
Arcadian Hill
Franklin Mine
Pewabic
DULUTH
M.T.U. SKI HILL
M.T.U. HOCKEY STADIUM
CBD
CBD
MICHIGAN TECHNOLOGICAL UNIVERSITY
Dollar Bay
HOUGHTON
Hurontown
Huron Lake
Forrest Hill Cem
Pilgrim
M.T.U. GOLF COURSE
Dodgeville
Isle Royale Sch
River
Pilgrim
NORTH
MILES
0 1 2 3 4 5 6

campus characteristics

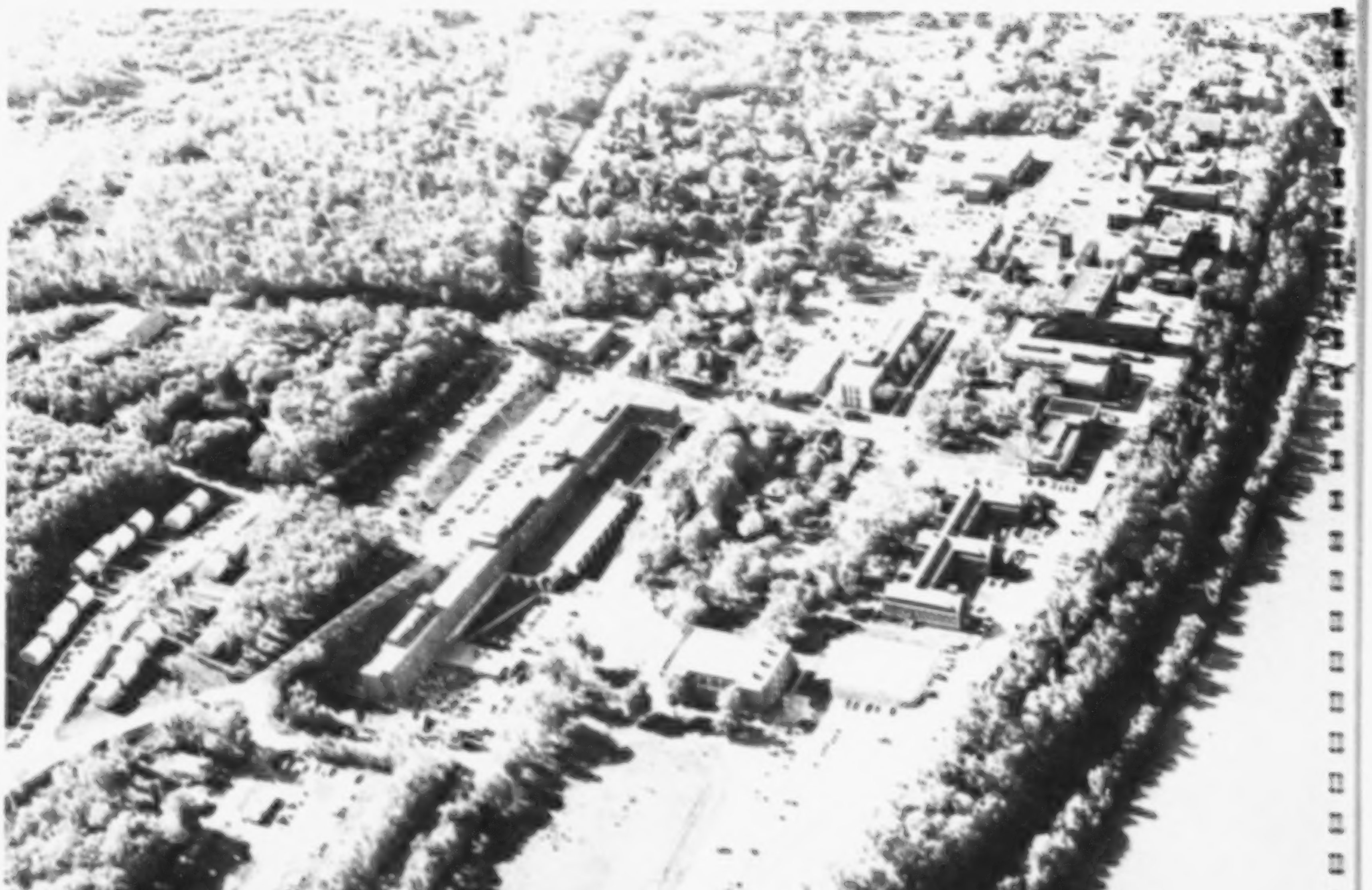
The attraction of the highway **2** to early development together with the natural limits to physical expansion on the north (the wooded bluff **8** along the lake) and on the south (the steeply-ascending topography **6**) have caused the campus to assume a lineal form, almost identical in configuration to the terrace of land upon which it is situated. The constriction of available land between the valley edge and the cemetery now limits eastward expansion **4**. A notable exception is the present athletic area, a relatively low intensity use in a zone of increasing activity. Existing community commitments limit opportunity for growth to the west. **5**

Although undeveloped University land is readily available for campus development above the steep wooded bluff south of the campus, it is relatively inaccessible from the lower campus by any route other than Upland Road. **7** While the other streets run contrary to the land contour, Upland Road curves gracefully up the slope and leads to a natural valley entrance. Because the upper area is beyond a five-minute walking radius, however, academic expansion into it could seriously affect the compactness of the present campus. Early academic commitments should be carefully considered and limited in size until such time as natural and compatible subdivisions of the campus develop.


ORIENTATION TO THE VALLEY
9
10 MINUTE WALKING DIAMETER
5 MIN. WALK DIA.
PORTAGE LAKE
1
2
3
4
5
6
7
8
200 400 600 800 FT

CAMPUS CHARACTERISTICS

aerial photograph of Michigan Technological University 1966



A review of the building history of the existing campus indicates a concentration of older structures at the west end between College Avenue and the lake. Dating as far back as 1889, these represent inefficient use of land in terms of Tech's present needs and future enrollments. From its beginning in this area, construction continued generally east (to the present athletic facilities) and southeast (to the married student housing area). More recently, new facilities were built on the south side of College Avenue. In 1965-66, the new library **1** established what will undoubtedly be the center of the campus for many years to come. Its position on the terrace near a potential connection to the upper campus by way of Upland Road is favorable.

Existing open space **3** forms a lineal pattern composed of the building line setbacks on either side of the highway. The new library has no significant setback and would extend into a meaningful open space in the event the highway were relocated and the street converted to pedestrian use. Buildings on the north side of College Avenue are architecturally oriented to the highway and form a virtual wall, effectively and unfortunately shutting out from the campus the beauty of the valley **9** just beyond. This pattern of building is one of the most unhappy practices of the past and should not be repeated in future developments.

The potential of a new campus environment free of highway traffic and full of the aesthetic qualities of the valley is outstandingly unique. The logic of this potential extends beyond aesthetic considerations. Because it is common to all the many campus areas presently separated by traffic arteries, bluffs and building walls, it is the valley that offers hope for unification and integrity of future campus development.

open space character
between Douglass Houghton and Wadsworth Halls

pedestrian / vehicle conflict

traffic and parking

The existing traffic pattern on the campus of Michigan Technological University is essentially one of a major artery, U.S. Highway 41, serving University, community and regional destinations, and a parallel local east-west route one block south on Houghton Avenue with several connecting streets.

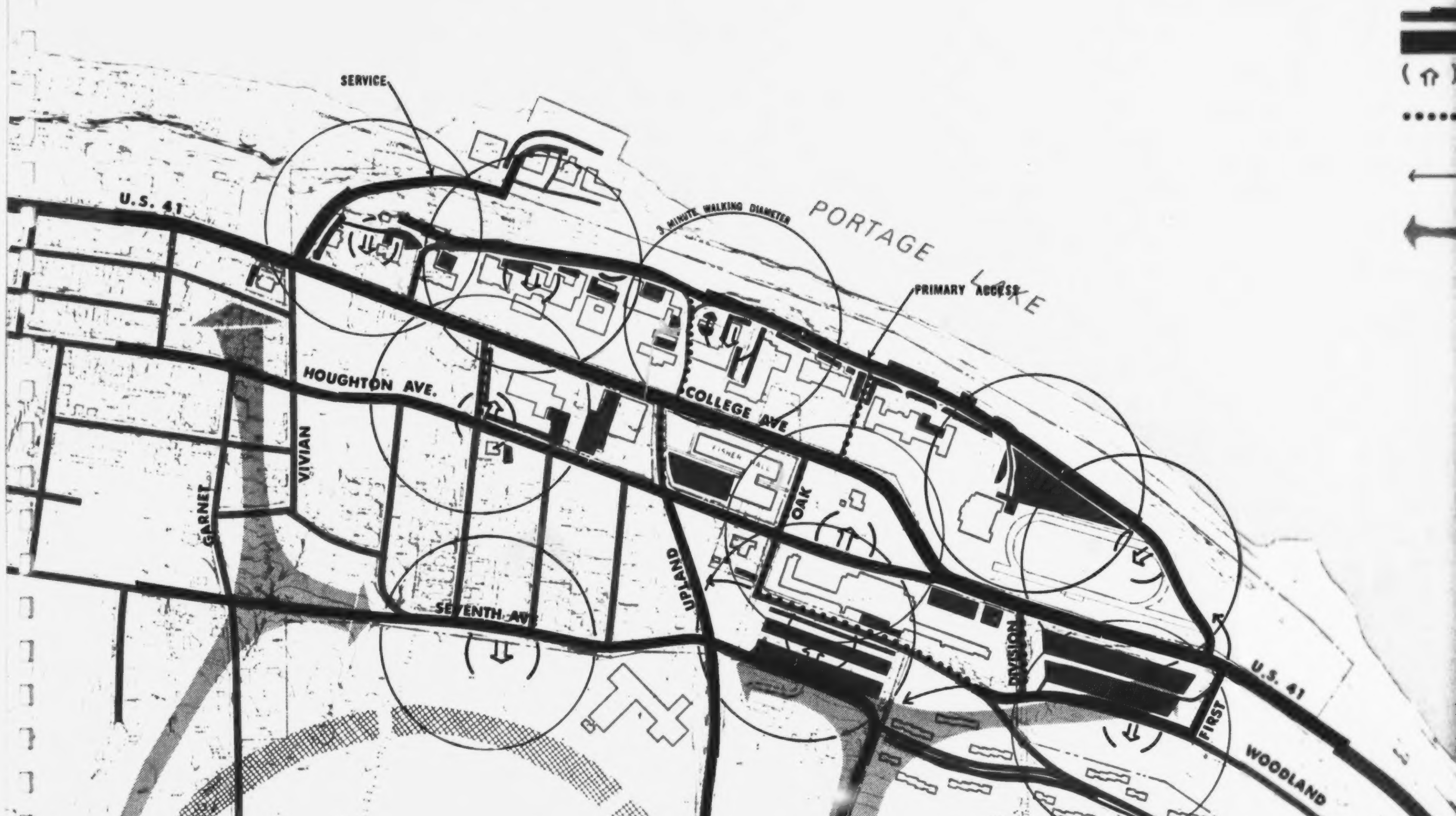
The present parking pattern consists of numerous small parking lots generally located at the rear of structures. The north edge of the campus facing the lake is entirely committed to parking and service drives that add to the separation between the campus and the picturesque qualities of the valley. Consideration should be given to consolidating the parking into fewer, more efficient concentrations, depressing them and their service route along the north edge below the general level of the campus.

One large parking area exists in the earth cut at the rear (south) of Wadsworth Hall and is serviced from Woodland Road. The contours of the land suggest the feasibility of constructing a multi-level parking structure into the slope with entrance to it from Upland Road on the uphill side. This route could blend into Seventh Avenue and serve additional parking facilities tucked into the slopes on its south side.

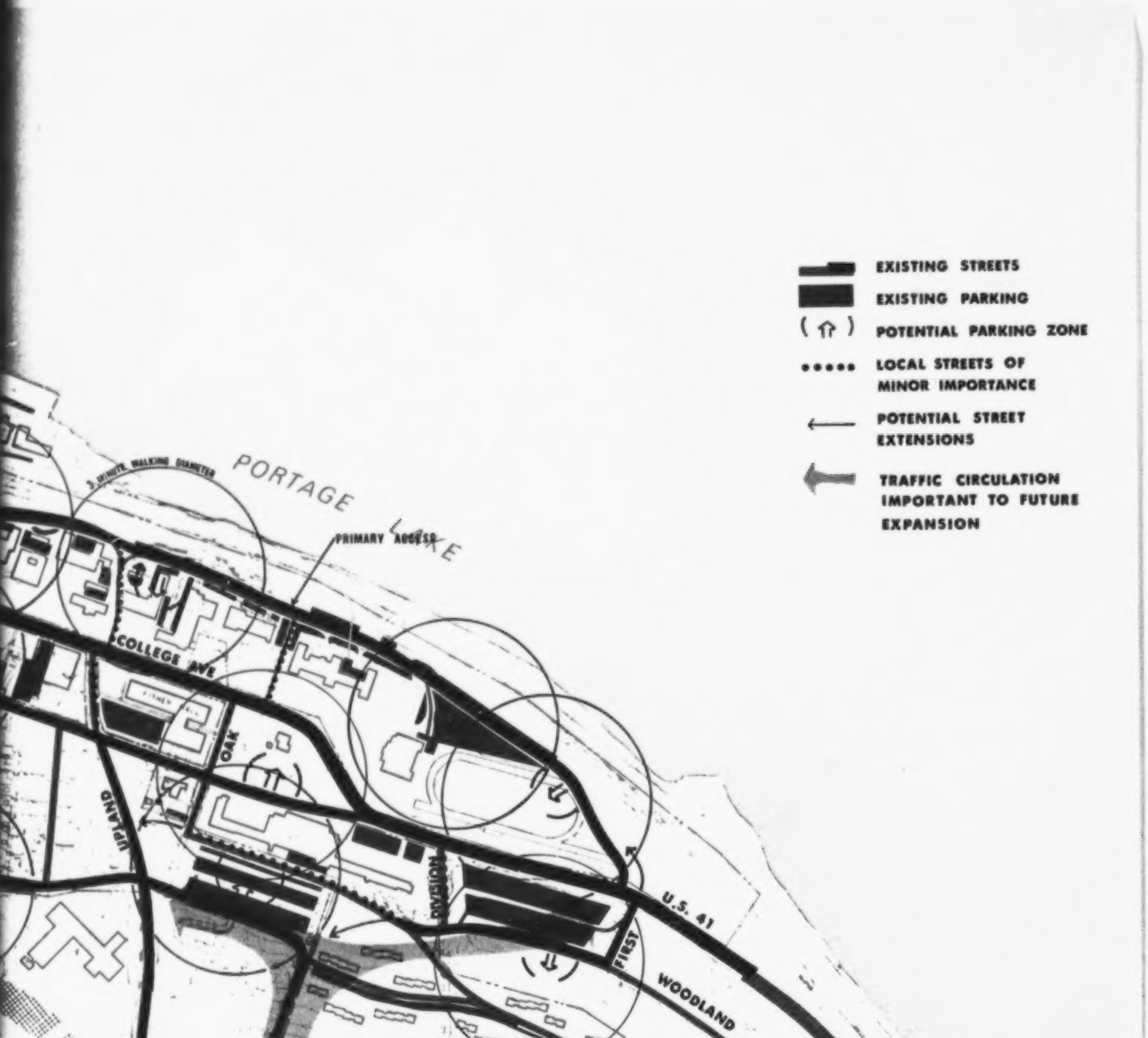
The Woodland Road-Upland Road-Seventh Avenue routing and the depressed service route along the north edge could be connected at their western and eastern extremities to form a perimeter parking/service aisle. This would remove from the interior campus the greatest amount of student, faculty and staff traffic. Visitor parking should be served from a separate routing related to the more public-oriented campus facilities.

Looking toward a campus of 9,000 and assuming 75% of the student body housed in residence halls, 10% married students and 15% commuters and a staff of 1,350, parking for more than 5,000 automobiles will be required. Parking structures will need to be considered to prevent large surface lots and to provide better control of traffic. Building programs should include parking as a required element and encourage inventive parking solutions integral with the buildings. Opportunities for parking concentrations are available on the campus.

parking along edge of valley


SERVICE
U.S. 41
3 MINUTE WALKING DIAMETER
PORTAGE LAKE
PRIMARY ACCESS
HOUGHTON AVE.
COLLEGE AVE
FISHER HALL
VIVIAN
GARNET
OAK
UPLAND
SEVENTH AVE
DIVISION
FIRST
U.S. 41
WOODLAND
FOREST HILL ROAD
PARKVIEW
ZONE OF SPECIAL CAMPUS EXPANSION
SHARON
POTENTIAL STORAGE PARKING
0 200 400 600 800 FT

TRAFFIC & PAR


EXISTING STREETS
EXISTING PARKING
(⇧) POTENTIAL PARKING ZONE
••••• LOCAL STREETS OF MINOR IMPORTANCE
← POTENTIAL STREET EXTENSIONS
TRAFFIC CIRCULATION IMPORTANT TO FUTURE EXPANSION
PORTAGE LAKE
5 MINUTE WALKING DIAMETER
PRIMARY ACCESS
COLLEGE AVE
OAK
UPLAND
DIVISION
FIRST
U.S. 41
WOODLAND
FOREST HILL ROAD
PARKVIEW

TRAFFIC & PARKING

PROJECTED EDUCATIONAL PROGRAM

Undergraduate

Current programs in engineering, science, business, and liberal arts will be continued with changes and additions made when desirable. Emphasis will continue to be on engineering and science, and the University's unique geographical location will be fully exploited. Continuous attention will be given to curriculum updating and improved teaching methods.

Graduate Research

The Master's degree will be offered in all major curricula and the Ph.D. will be added to departmental programs when appropriate. By 1975 the Ph.D. will be offered in at least eight departments. Increasing attention will be given to advanced study until the graduate student enrollment is approximately ten per cent of the total. All departments of the university will participate in this expanding program which, of necessity, will emphasize research sponsored by the federal government and private industry. Such research programs are essential to contemporary education not only at the graduate but also at the undergraduate level.

Associate Degree

This important area will be expanded to meet the ever-increasing demand from industry. Programs will be inaugurated in those technical areas where the University's competence is well established and staff and facilities are available for teaching the courses.

Continuing Education

The University will continue to provide specialized service to the community through its continuing education division. These services will include federally-sponsored programs as well as those of local origin designed to meet particular needs of the community. They will consist of a variety of courses, programs, and conferences primarily for adults.

Summer Programs

The University, as a matter of policy, proposes to make optimum use of its facilities within the limits of administrative practicality during the summer quarter, and will undertake whatever steps are both indicated and feasible to achieve such use.

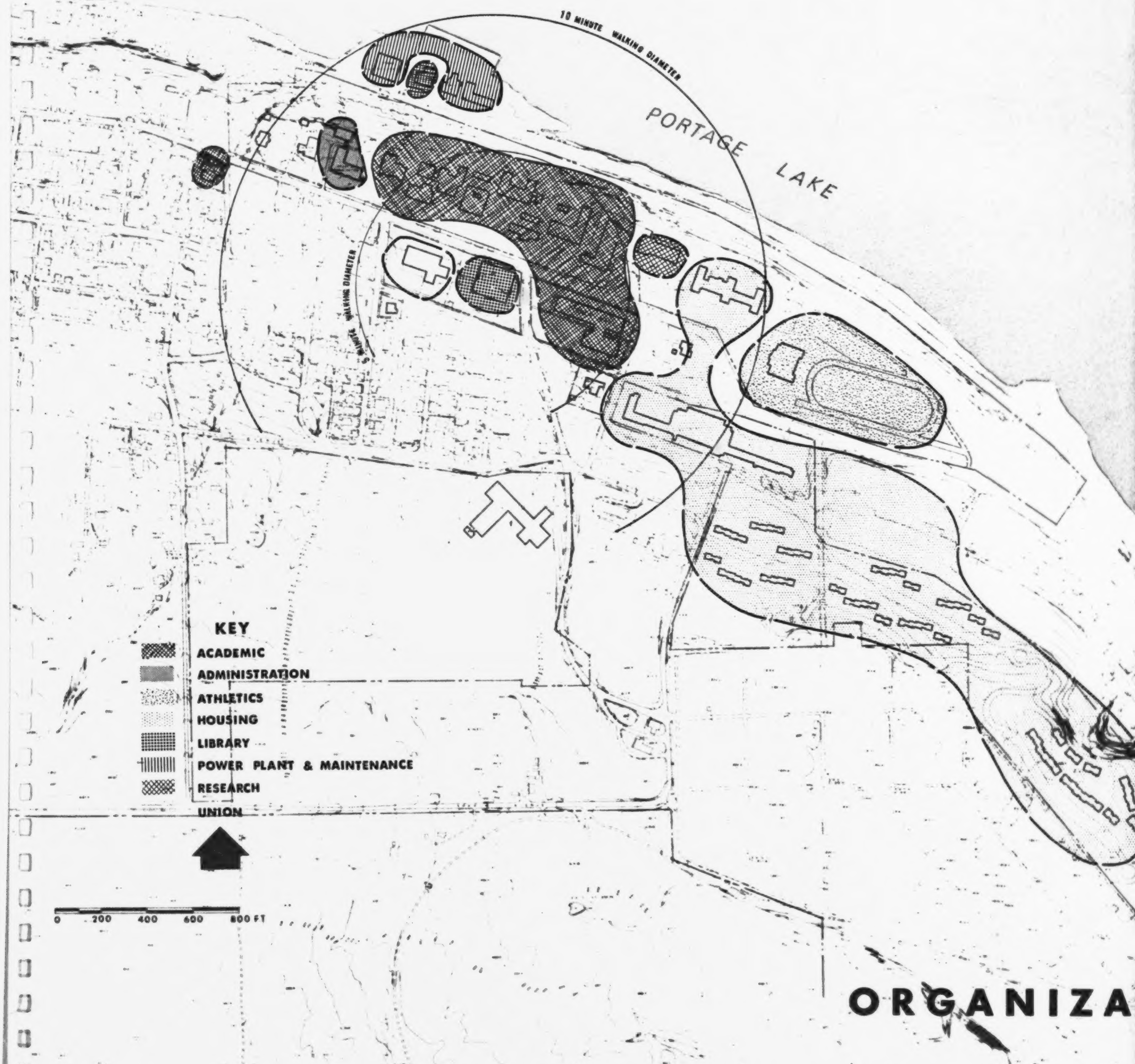
organization

Compactly arranged within a pedestrian dimension, the present campus is organized as a band of academic facilities paralleling the valley with administrative services at its western end and athletic facilities to the east. With the exception of Douglass Houghton Hall on the north edge, housing generally forms a parallel band along the ascending slopes south and southeast of the academic area. Service facilities are located along the lakeshore north and west of the central campus and are separated from it by a distinct change in elevation.

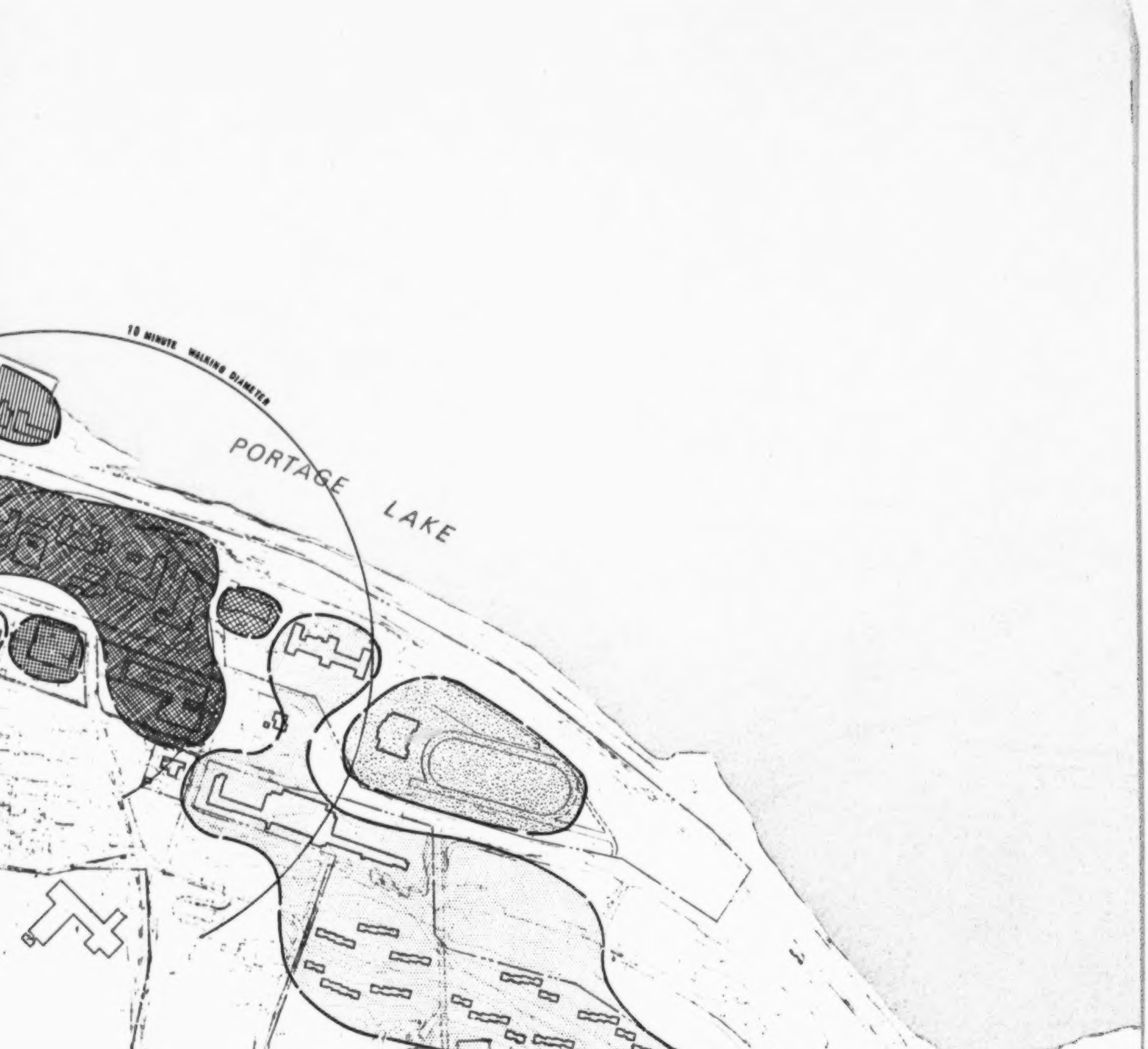
With the construction of the new library adjacent to the Memorial Union, a campus nucleus is beginning to form which will have increasing significance in the future. The present large commitment to academic facilities on the terrace indicates the advisability of searching for ways to accommodate all projected academic needs within a five-minute walking distance from the library. The proximity of the library to College Avenue also makes it desirable to relocate the highway.

The present distribution of academic facilities demands considerable student movement between classes. The existing characteristic of compactness is, therefore, one of necessity. It is made necessary, too, by a winter climate that emphasizes the importance of short walking distances between classes.

In order to maintain and improve its position as a strong center of engineering and science, a commitment to research in its own right and as a necessary part of the instructional program has been made. The University plans a graduate enrollment equal to 10% of the total.


10 MINUTE WALKING DIAMETER
5 MINUTE WALKING DIAMETER
PORTAGE LAKE
KEY
ACADEMIC
ADMINISTRATION
ATHLETICS
HOUSING
LIBRARY
POWER PLANT & MAINTENANCE
RESEARCH
UNION
0
200
400
600
800 FT

ORGANIZA


10 MINUTE WALKING DIAMETER
PORTAGE LAKE

ORGANIZATION

Student Population:	Existing	Projected	
	1965-66	1970-71	1975-76
Undergraduate	3,193	5,184	6,998
Graduate	134	406	612
Special Program	145	400	1,000
	3,472	5,990	8,610

1975-76 Space Projections and Criteria:

Academic	8,610 @ 200 sq. ft./student	1,722,000 sq. ft.
Non-academic	(allowance)	430,500 sq. ft.
		2,152,500 sq. ft.
Union	(allowance)	150,000 sq. ft.
Housing, single	75% @ 250 sq. ft./student	1,614,375 sq. ft.
Housing, married	10% @ 700 sq. ft /student	602,700 sq. ft.
		2,367,075 sq. ft.

Parking:

visitors, faculty, staff	1:6-2/3 students @ 1-space each	1,291 spaces
resident students	75% @ 1 space/4 students	1,614 spaces
married students	10% @ 1 space each	861 spaces
commuters	15% @ 1 space each	1,292 spaces
		5,068 spaces

5068 spaces @ 310 sq. ft./space = 1,571,080 sq. ft. (36 acres)

site availability

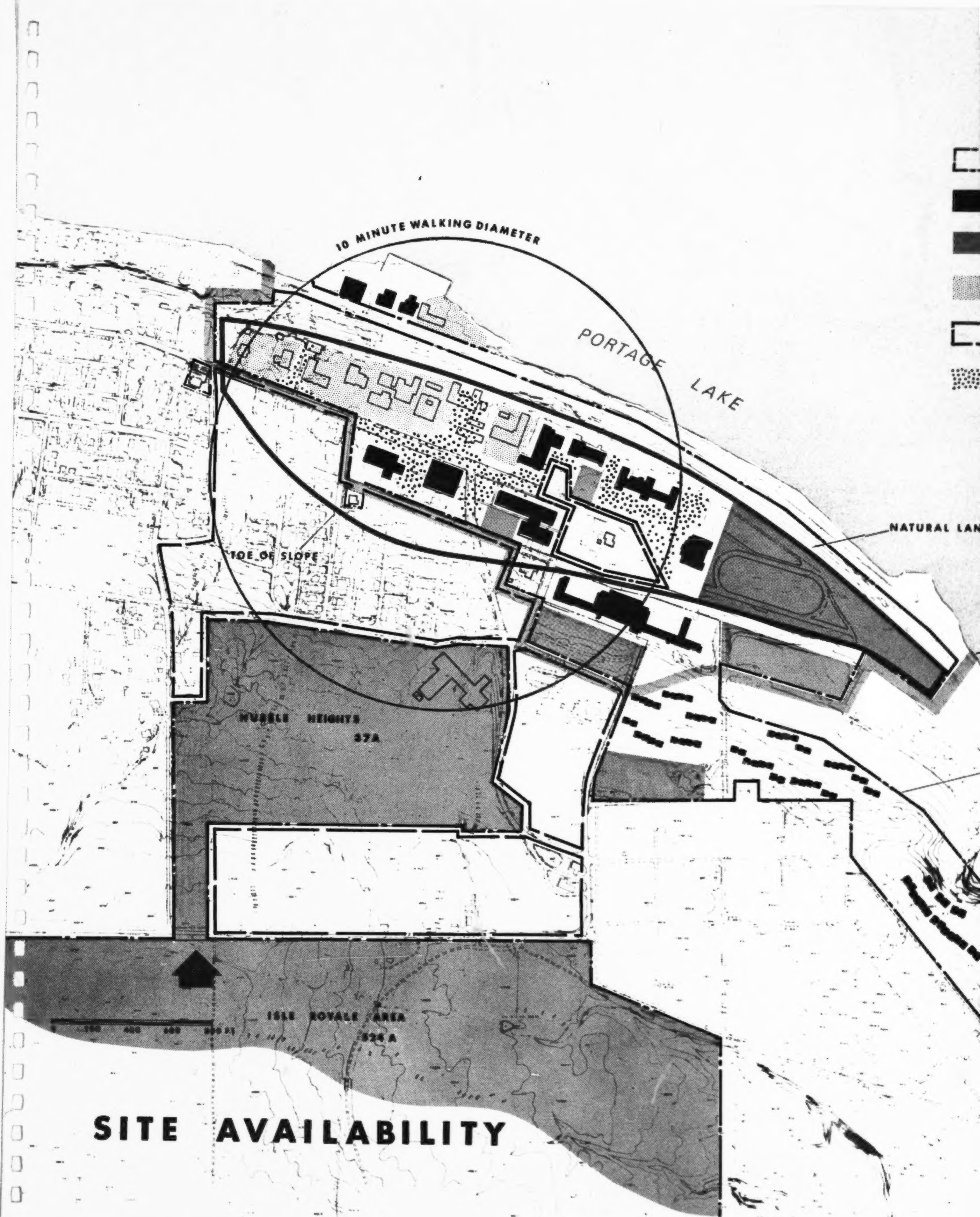
Initial analysis would indicate that the availability of land for University expansion presents no particular problem. The University-owned land above Seventh Street and extended southward represents a considerable expansion potential for the University. In view of the need for compactness, however, its availability for development poses more of a challenge than an opportunity.

The bluff property is separated from the campus center by several factors: a belt of private residential housing, steep terrain and the effect that distance and the terrain have upon the walking time from the campus center. It is vitally important, therefore, that the utilization of this available land be thoroughly studied and its implications upon the future of the University be fully understood prior to development commitments.

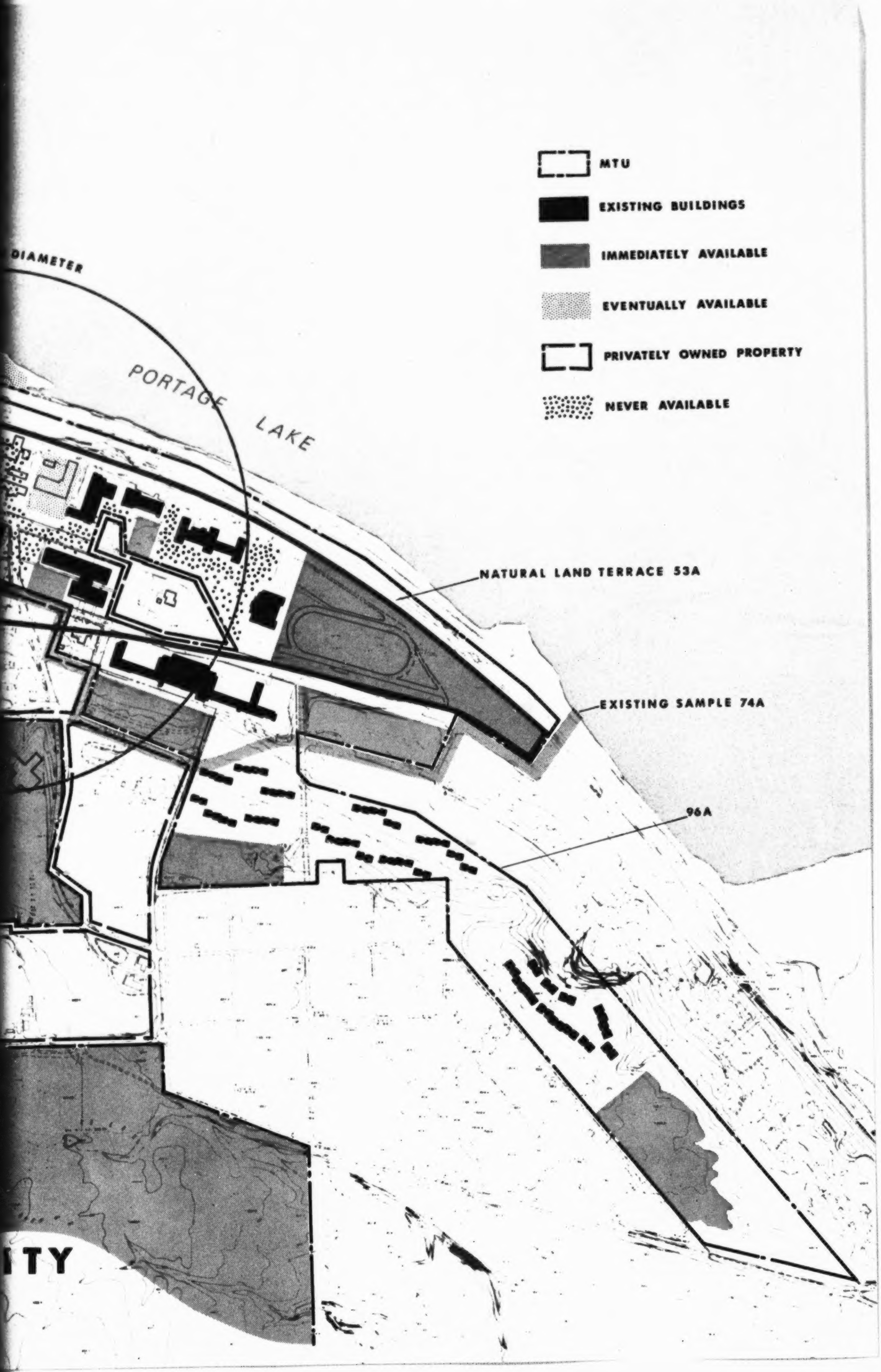
To gain a unit of dimension of the existing development pattern as a test against future needs, a sample area representing the most intensive use area of the campus was measured in terms of land area and building floor area. Relating the two, the ratio of gross floor area of the buildings (all floors) to the land area is .36 (Floor Area Ratio). If this existing pattern of land development were continued to an ultimate student campus of 9,000, 140 acres would be required for academic, service and special functions alone. The advantages of compactness prominently identified with the present campus would be lost. If the ten-minute walking diameter were maintained as a limit of expansion and the present development pattern were adhered to, enrollment growth would be limited to about 5,000 students.

The alternatives are apparent. Continuation of the present pattern of land development based upon the requirements of the given academic organization would result in the loss of physical coherence and the current pedestrian orientation. On the other hand, if physical compactness is a necessary characteristic of the future University, then the development pattern must be changed to use the land area more intensively and efficiently.

It is worth noting that the *natural* limits of the terrace of land upon which the University is presently situated can accommodate some 9,000 students with reasonable density and within a walking dimension. To do so would require only the rebuilding of the older northwest corner of the campus and the relocation of the highway outside, or at the edge of, the natural limits of the terrace.


10 MINUTE WALKING DIAMETER
PORTAGE LAKE
TOE OF SLOPE
NATURAL LAN
HUBBLE HEIGHTS
37A
ISLE ROYALE AREA
524 A
0 200 400 600 800 FT

SITE AVAILABILITY


MTU
EXISTING BUILDINGS
IMMEDIATELY AVAILABLE
EVENTUALLY AVAILABLE
PRIVATELY OWNED PROPERTY
NEVER AVAILABLE
DIAMETER
PORTAGE LAKE
NATURAL LAND TERRACE 53A
EXISTING SAMPLE 74A
96A
ITY

summary conclusions

1. *The relocation of the highway outside of the academic area is essential to proper future development of the campus; indeed, the location of the highway will determine the future campus plan. It can be combined with the slope of the south edge of the terrace as part of a natural limit to that side of the campus.*

2. *The natural terrace of land from the north edge to the toe of the bluff south of the present campus can accommodate the projected enrollment of 9,000 students if it is developed more intensively and efficiently. This would require the relocation of major athletic facilities and special function facilities, such as research, which are not dependent upon the usual academic building use and frequent student class changes. The relocation of these separable functions could determine the nature of new development on the University land south of Seventh Avenue.*

3. *The University should be identified at its western and eastern extremities.*

4. *The common denominator of all the individual units of land is the Portage Lake valley. Orientation to the valley would provide unification to the expanded campus.*

5. *The slopes along the north edge of the campus offer unique opportunities for a service drive giving access to several faculty/staff parking areas perhaps two or several levels in height. Recessed into the edge of the embankment below the general level of the campus, these parking facilities would not interfere with views of the valley from the campus.*

6. *Public and visitor parking would be served best adjacent to the relocated highway with commuter student parking provided on the open flat land to the south. An opportunity for a multi-level parking facility exists on the site of the present surface lot cut into the earth slope behind Wadsworth Hall.*

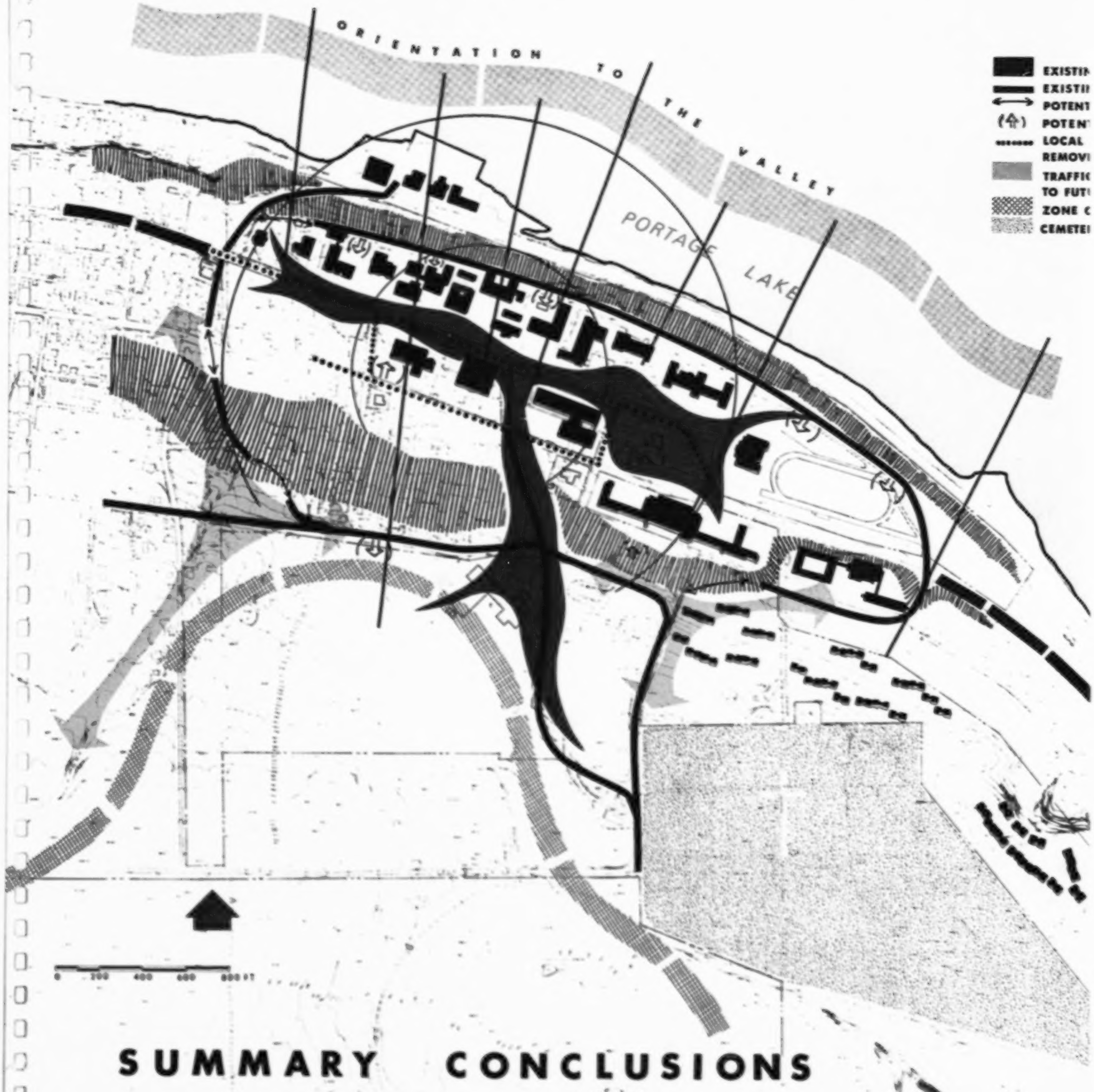
7. *The land area on the slope between the present campus and the undeveloped University land to the south can be made to serve the University's needs for housing and related uses through private or public development.*

8. *Upland Road connecting with Forest Hill Road, offers a pleasant and easy link between the lower and upper University lands. All other routes are steep and difficult to ascend on foot.*

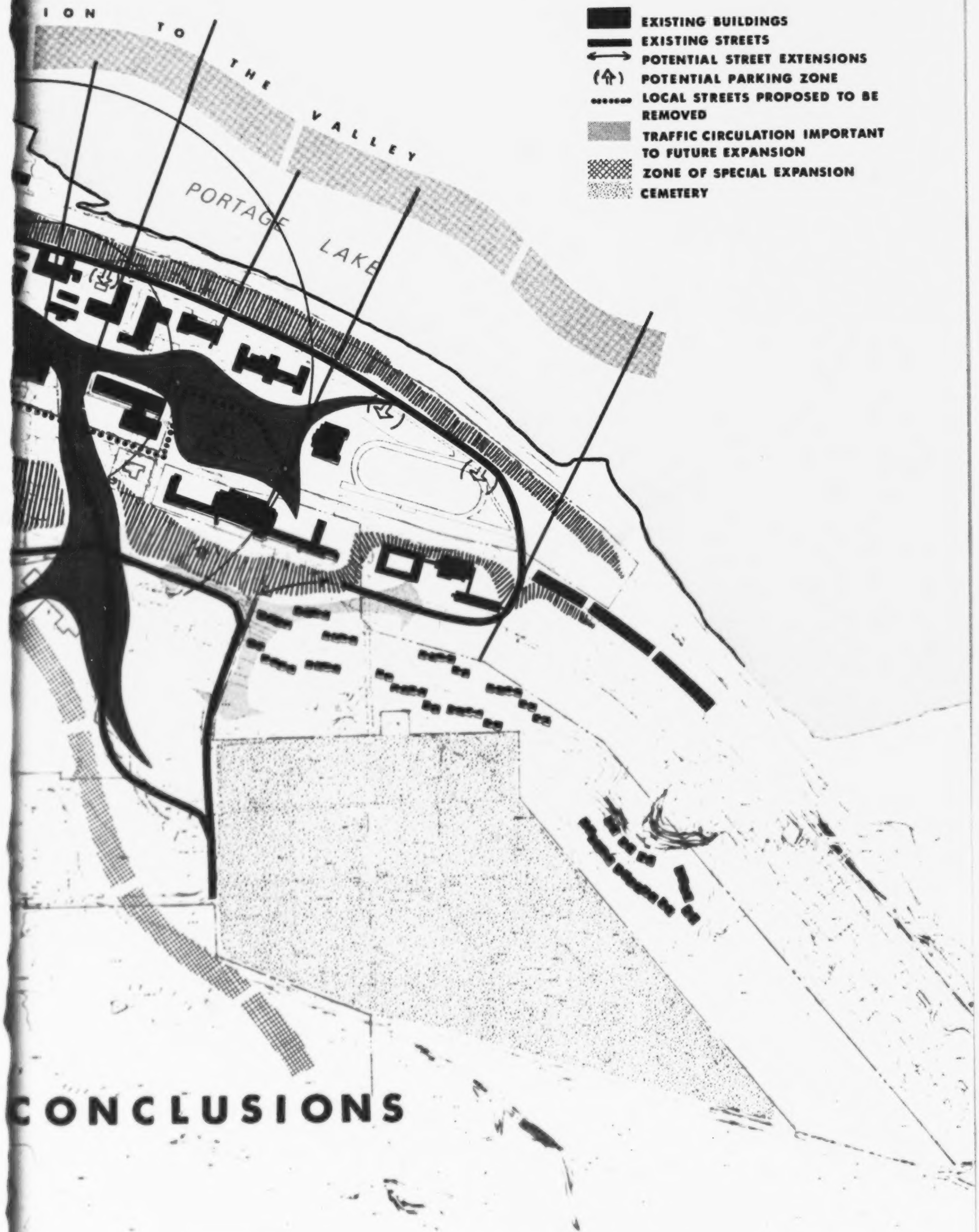
9. *The key to an orderly future campus development is the establishment of an efficient pedestrian circulation pattern permitting development of building complexes along its edges.*

10. *The open space pattern should be related to this pedestrian circulation and provide visual connections between the interior of the campus and the valley as well as a substantial degree of informal recreation space. The present right-of-way of the highway should be included in the pedestrian/open space pattern when it is relocated.*

11. *The wooded open space in front of Douglass Houghton Hall should be retained: in character for its outstanding contribution to the campus environment, in dimension as a balance to the building mass of Wadsworth Hall, and in function as an informal recreation area.*


ORIENTATION TO THE VALLEY
PORTAGE LAKE
EXISTIN
EXISTI
POTENT
POTENT
LOCAL
REMOV
TRAFFI
TO FUT
ZONE
CEMETE
0 200 400 600 800 FT

SUMMARY CONCLUSIONS


ION TO THE VALLEY
PORTAGE LAKE
■ EXISTING BUILDINGS
▬ EXISTING STREETS
↔ POTENTIAL STREET EXTENSIONS
(⇧) POTENTIAL PARKING ZONE
•••••• LOCAL STREETS PROPOSED TO BE REMOVED
▒ TRAFFIC CIRCULATION IMPORTANT TO FUTURE EXPANSION
▩ ZONE OF SPECIAL EXPANSION
░ CEMETERY

CONCLUSIONS

CONCEPT DEVELOPMENT

ONTO VALLE
P
P
P
P

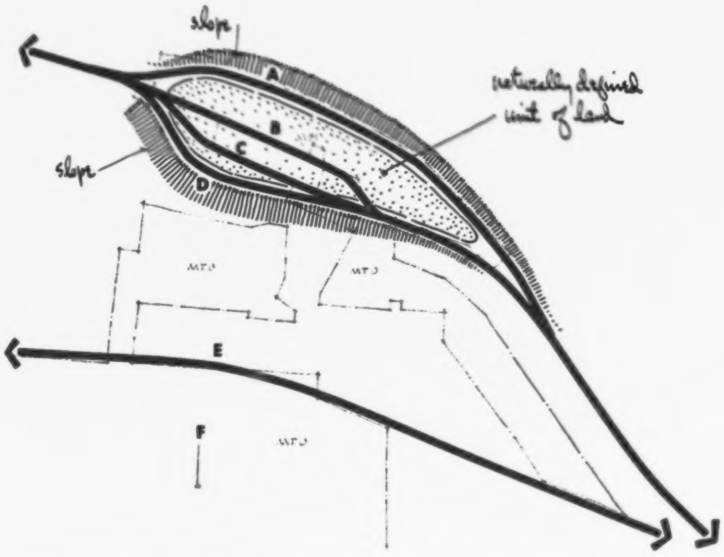
concept development

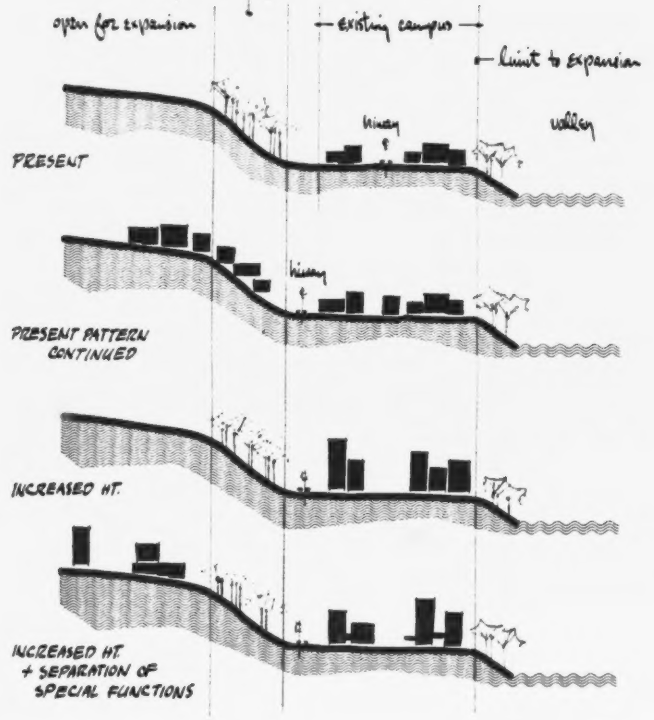
Because the highway routing has critical implications for the future campus plan, alternative relocations have been presented and reviewed with the Michigan State Highway Department.

From the viewpoint of campus development, the alternatives that lie entirely outside the zone of University activity would permit the greatest flexibility of plan and eliminate most pedestrian/vehicle conflicts. Routings **E** and **F**, however, proved impractical due to the vertical descent necessary to tie them back into the community and the lift-bridge crossing. Route **A** was equally unfeasible because of the difficult slope and the resulting costly engineering problems. Therefore, some route across the University land terrace became necessary.

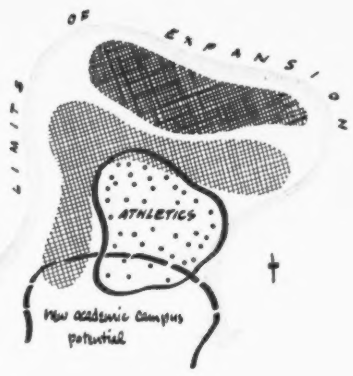
The present alignment of College Avenue **B** is a serious problem now and would become increasingly worse with the growth of the University. Houghton Avenue **C**, while currently more removed from the zone of greatest campus activity, would become as great a problem as College Avenue when the campus expands.

With route **D** aligned with the edge of the terrace along the toe of the slope, the once narrow corridors of land could be brought together into a single unit, and the entire terrace would become an integral and developable campus site.

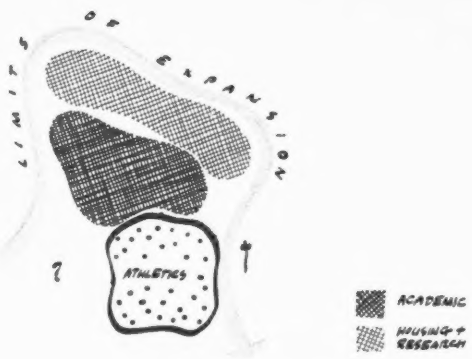



difficult zone of pedestrian movement
open for expansion
← existing campus →
← limit to expansion
hiway
valley
PRESENT
hiway
PRESENT PATTERN CONTINUED
INCREASED HT.
INCREASED HT. + SEPARATION OF SPECIAL FUNCTIONS

Because of the linear configuration of the campus the study of a cross-section is helpful in analyzing its growth potential. The terrace acquires the capacity to accommodate the academic needs of the projected enrollment through relocation of the highway from the middle to the edge. Buildings would need to be taller in the future development and special functions such as research and major athletic facilities, would need to be located on the upper lands.


LIMITS OF EXPANSION
ATHLETICS
new academic campus potential

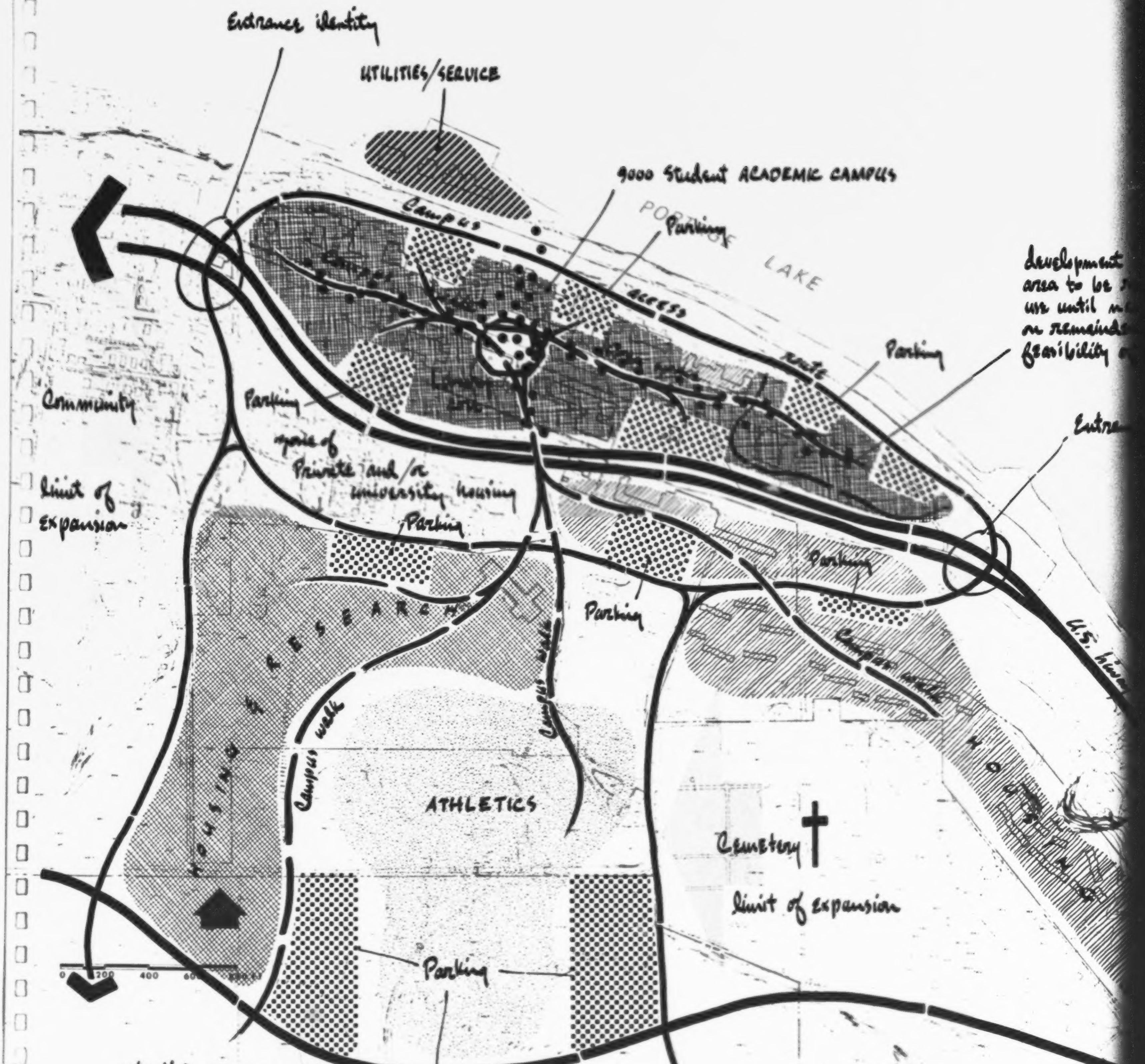
An alternative would be to redirect the future growth of the academic program to the upper land and reserve the existing campus for specialized activities such as research. The substantial commitment to academic use on the present campus tends to invalidate this concept. If, however, the ability of the lower terrace to accommodate the projected enrollment is limited by either the highway relocation along some route other than the extreme south edge or the inability to build taller structures, this concept, or some segment of it, may have to be re-evaluated.

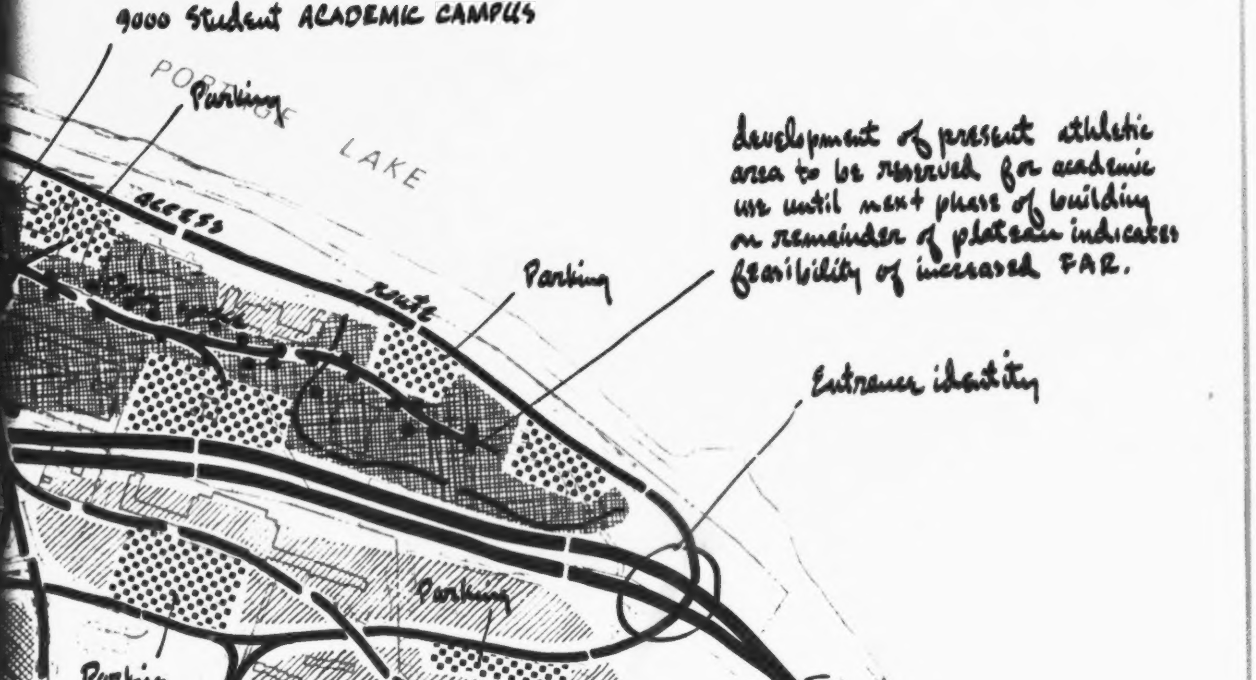

LIMITS OF EXPANSION
ATHLETICS
ACADEMIC
HOUSING + RESEARCH

The recommended concept takes full advantage of the entire land terrace. The highway parallels the bluff at its toe in a divided boulevard design. Community-oriented University facilities (administration, Union, auditorium, museums, etc.) are located close to parking served by the highway. Identification is established at each end of the campus at the intersection of a loop access road. The loop road serves faculty and staff parking at academic building complexes along the north and parking for student housing and research on the south. Commuter student parking utilizes the proposed athletic parking lots farther to the south. Housing is extended to the east and west, and it is assumed that the zone between these two areas of the campus would be developed, at least in part, to provide for additional University housing needs.

The pedestrian circulation/open space pattern is organized around the abandoned present highway and centered about the new library. Taller structures replace the older buildings along the north edge. Aligned perpendicular to the length of the campus, they are spaced to provide frequent open scenic views of Portage Lake. A major open space connection to the valley is recommended in front of the library when McNair Hall is removed sometime in the future. The wooded area in front of Douglass Houghton Hall is retained to inspire comparable landscape character for other parts of the campus.

Upland-Forest Hill Road is incorporated into the pedestrian circulation system as the major link between the two areas. It extends from the library to the pedestrian walk through the Forestry building, and continues southward to a new athletic campus on the upper plateau with the physical education/intramural complex at its terminus.


Entrance identity
UTILITIES/SERVICE
9000 Student ACADEMIC CAMPUS
Parking
PORT OF
LAKE
Campus access route
development
area to be
use until
on remainde
feasibility o
Entra
Community
Parking
zone of
Private and/or
university housing
limit of
expansion
Parking
Parking
Parking
Parking
HOUSING & RESEARCH
Campus walk
Campus walk
Campus walk
Campus walk
U.S. hwy
HOUSING
ATHLETICS
Cemetery
limit of expansion
0 200 400 600 800
Parking
potential for new and
separate academic campus
related to common
athletic and research area
PLAN CONCEPT


9000 Student ACADEMIC CAMPUS
PORTAGE LAKE
Parking
ACCESS route
development of present athletic area to be reserved for academic use until next phase of building on remainder of plateau indicates feasibility of increased FAR.
Parking
Entrance identity
Parking
Parking
Campus walk
Campus walk
U.S. hiway 41
HOUSING
Cemetery
limit of expansion

PLAN CONCEPT

PLAN DESCRIPTION

west

The west section of the campus as proposed includes virtually all of the academic facilities. Centered about the new library, this concentration of academic functions provides for a highly efficient arrangement with short distances between classrooms. New instructional facilities are generally proposed in high-rise structures of from eight to eleven stories along the north edge of the campus. Replacing the existing "wall" of structures, these taller buildings would be positioned to provide views to the valley. The most generous and dramatic open view is proposed in front of the library. This major open space would set the character for the open space/ walkway system linking all parts of the campus.

Public-oriented university facilities are placed along the new highway routing and concentrated about two easily accessible parking areas. These facilities include the expansion of the Union and library, the new administration building, auditorium and museums.

Parking for faculty and staff forms the nucleus of building complexes along the north edge and is reached by an access route connecting to the highway at a point common to the access route serving the upper research/ athletic area.

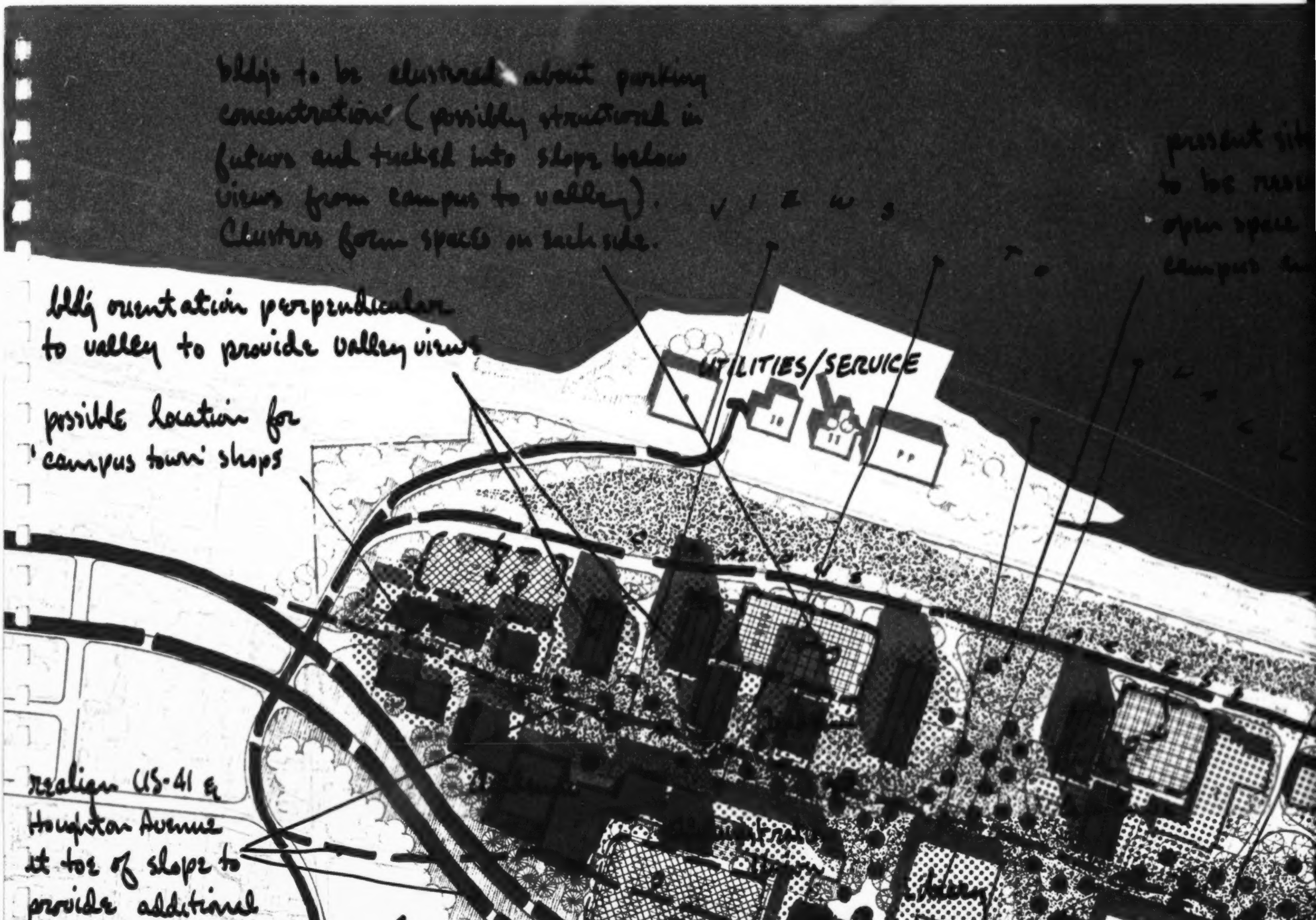
The development of "campus town" shops at the west edge of campus is suggested as a possible way in which this student-community service could be encouraged by the University and developed as an integral part of the campus environment. This zone could also be considered for academic use in the event that the full potential of the remaining land area is not achieved.

It is important to understand the need to develop this portion of the campus with an intensity that will result in keeping all academic facilities within a reasonable walking dimension. Each developmental step along the way must be limited in its consumption of land, or the potential will be lost.

Land area (48.5 acres)		2,112,660 sq. ft.
Building ground coverage		
existing buildings to remain		126,089 sq. ft.
proposed buildings		284,020 sq. ft.
	Total	410,109 sq. ft.
Gross Floor Area		
existing buildings to remain		391,857 sq. ft.
proposed buildings		1,769,520 sq. ft.
		2,161,377 sq. ft.

G.A.C. .19
F.A.R. .98

G.A.C.	The Ground Area Coverage in the ratio of the ground area covered by structures to the total ground area of a defined zone.
F.A.R.	The Floor Area Ratio in the ratio of the total floor area (on all floors of all buildings) to the total ground area of a defined zone.



bldg's to be clustered about parking concentrations (possibly structured in future and tucked into slope below views from campus to valley). Clusters form spaces on each side.

bldg orientation perpendicular to valley to provide valley views

possible location for 'campus town' shops

realign US-41 & Houghton Avenue at toe of slope to provide additional land for development contiguous to present development.

visitor approach to University.

this zone is appropriate for private and/or Univ. housing for faculty, staff, students

▩ basic bldg layout organization
▇ bldgs (new & old) that define space
▬ ▬ major vehicular movement
▩ parking
● ● major pedestrian movement

V I E W S
UTILITIES/SERVICE
10
11
PP
HIGHWAY
SEVENTH AVENUE
UPLAND
RESEARCH/ATHLETIC CAMPUS
FORESTRY
HOUSING
H
R
12
5
present sit
to be res
open space
campus a
Upl
to
tria
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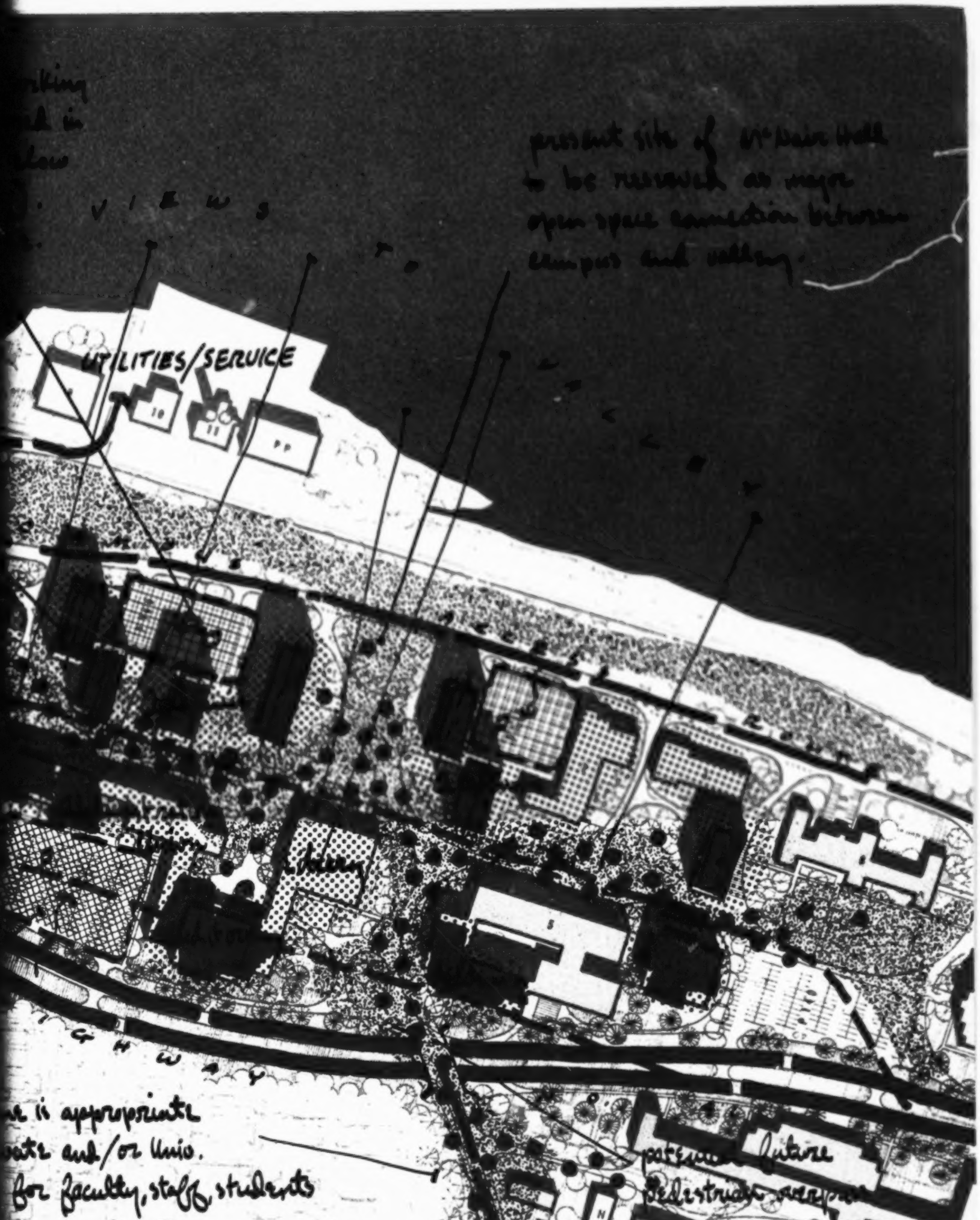

V I E W S T O
UTILITIES/SERVICE
G H W A Y
A V E N U E
UPLAND ROAD
LIBRARY
CH/ATHLETIC CAMPUS
H O U S I N G

rking
ed in
llow

present site of McNair Hall to be reserved as major open space connection between campus and valley.

e is appropriate
vate and/or Univ.
for faculty, staff, students

potential future pedestrian overpass

Upland/Forest Hill Road to serve as major pedestrian link between campuses.

east

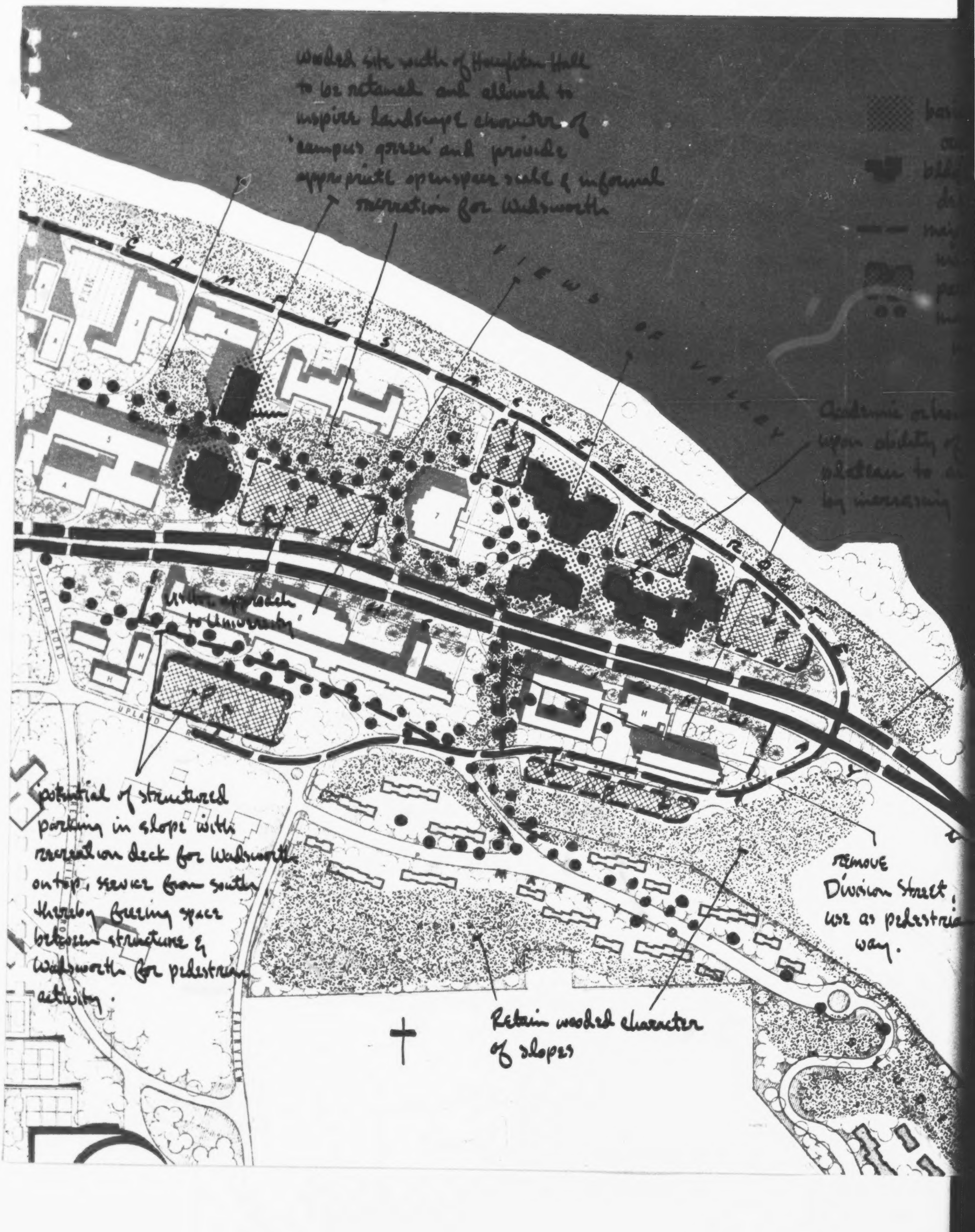
Closely related to existing housing and in a part of the campus that will receive pressure for development as the University grows, this area should be developed for additional housing but with a low ground area coverage. The aim is to maintain a large percentage of open space to assure adequate room for informal recreation for the student residents. This provision could be appropriately accommodated within the open space/walkway system and include the preservation of the outstandingly attractive stand of trees between Douglass Houghton and Wadsworth Halls.

A loop access route is proposed at the east end of the campus, similar to that on the west. As it enters the housing areas south of the highway, it would also service a proposed multi-level parking structure in the existing cut of land south of Wadsworth Hall.

Pending determination of the feasibility of the highway realignment and the provision of high-rise academic buildings, it might be wise to delay development of this portion of the campus. Also, in the event that the academic potential of the west end of campus should not be achieved as planned, this area would necessarily need to be considered for academic use.

Land area (78 acres)		3,397,680 sq. ft.
Building ground coverage		
existing buildings to remain		178,403 sq. ft.
proposed buildings		90,800 sq. ft.
	Total	269,202 sq. ft.
Gross Floor Area		
existing buildings to remain		572,882 sq. ft.
proposed buildings		324,400 sq. ft.
	Total	897,282 sq. ft.

G.A.C. .08
F.A.R. .26



wooded site south of Houghton Hall to be retained and allowed to inspire landscape character of 'campus green' and provide appropriate openspace scale & informal recreation for Wadsworth

Urban approach to University'

potential of structured parking in slope with recreation deck for Wadsworth on top, service from south, thereby freeing space between structure & Wadsworth for pedestrian activity.

Retain wooded character of slopes

remove Division Street, use as pedestria way.

Academic or
upon ability of
plateau to a
by increasing

bas
a
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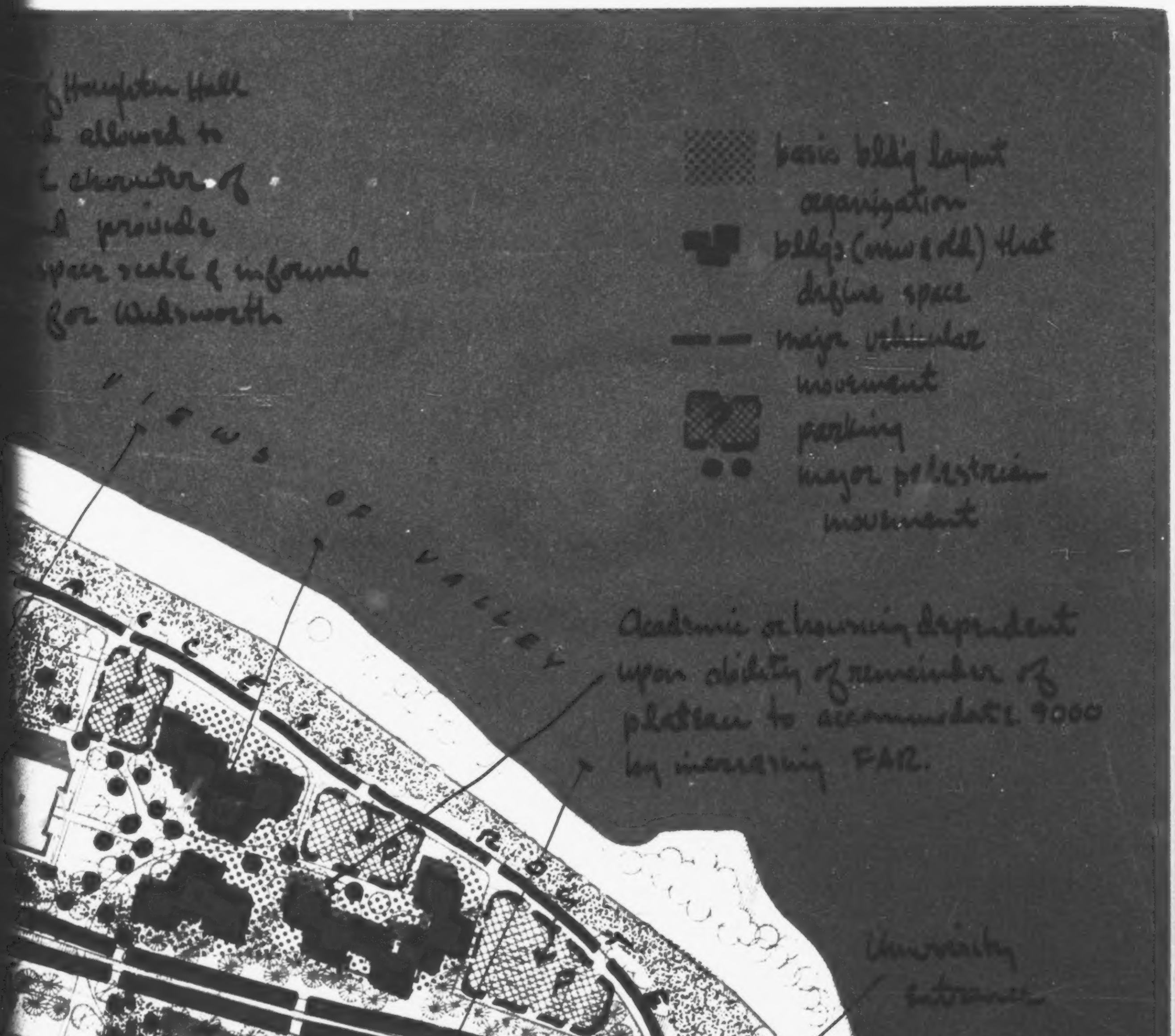
p



f Houghton Hall
e allowed to
e character of
d provide
space scale & informal
for Wadsworth

▩ basic bldg layout organization

■ bldgs (new & old) that define space

— — major vehicular movement

▩ parking

● ● major pedestrian movement

Academic or housing dependent upon ability of remainder of plateau to accommodate 9000 by increasing FAR.

University entrance

REMOVE Division Street, use as pedestrian way.

Retain wooded character of slopes

south

Situated beyond a desirable walking distance from the lower campus, this area is adaptable to research functions that do not require quick and frequent classroom changes. Concentrated along Seventh Avenue, these facilities would be related to the vehicular access loop and to the pedestrian walkway extension along Upland and Forest Hill Roads. A natural ravine at the northeast corner of the area offers an effective pedestrian entrance.

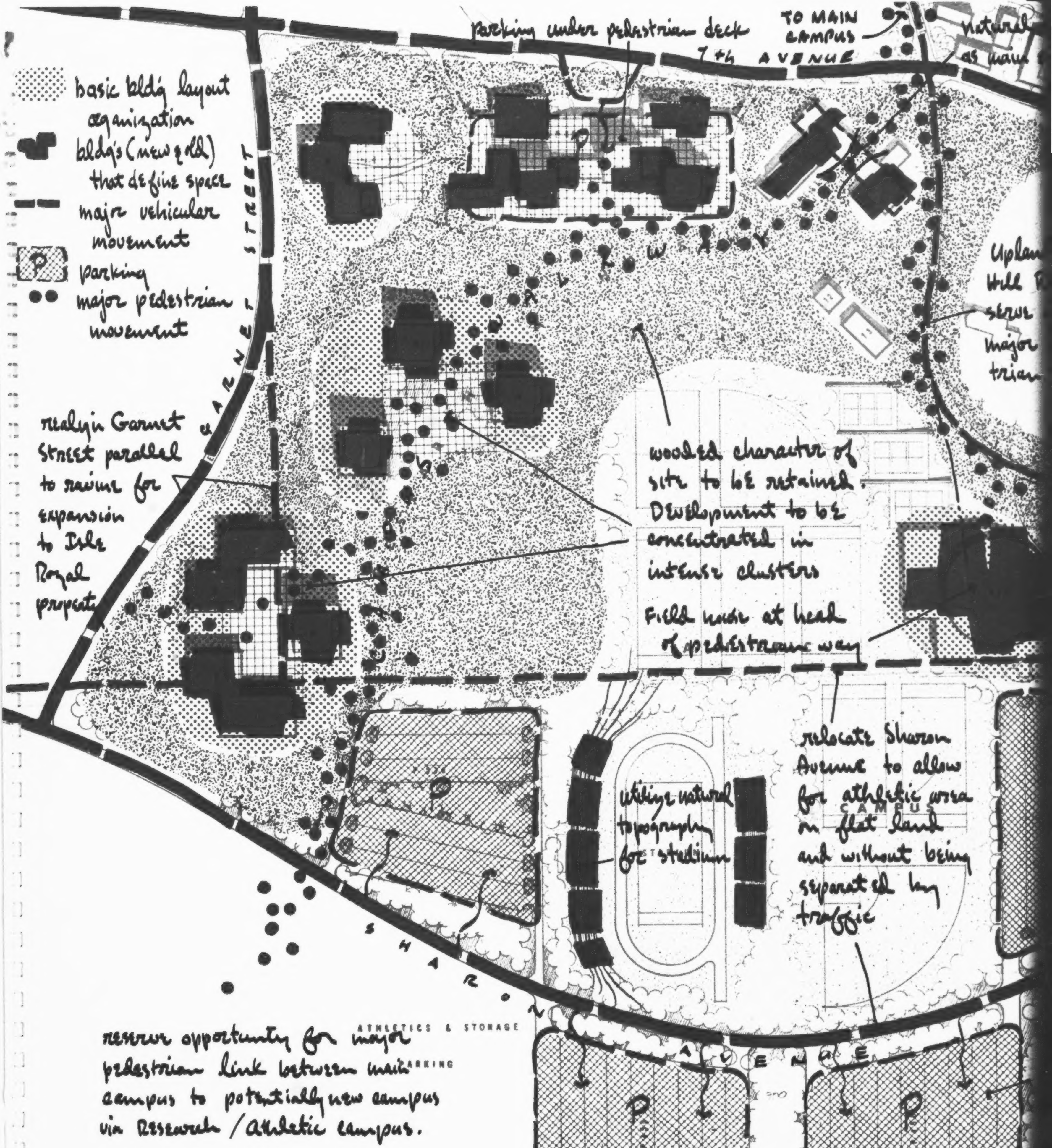
Redirecting Sharon Road south onto University property frees a parcel of relatively open and level ground for the expanding needs of the athletic plant. Athletic parking facilities could perform a double service by accommodating daily commuters. The physical education/intramural complex thus receives a dramatic setting at the head of the pedestrian link back to the lower campus.

Additional housing is suggested in tight clusters so as not to destroy the natural wooded qualities of the site.

Logical extensions of both vehicular and pedestrian circulation systems would connect undeveloped University land to the south with the main part of the campus. The potential of these relationships should not be lost in the development of this parcel.

Land area (133 acres)		5,793,480 sq. ft.
Building ground coverage		
existing buildings to remain		none sq. ft.
proposed buildings		586,810 sq. ft.
	Total	586,810 sq. ft.
Gross Floor Area		
existing buildings to remain		none sq. ft.
proposed buildings		1,333,530 sq. ft.
	Total	1,333,530 sq. ft.

G.A.C. .10
F.A.R. .23



7th AVENUE
GARNET STREET
PARKWAY
SHARON AVENUE
ATHLETICS & STORAGE
PARKING
CAMPUS
P

- ▒ basic bldg layout organization
- ■ bldg's (new & old) that define space
- ▬ ▬ major vehicular movement
- Ⓟ parking
- ● ● major pedestrian movement

parking under pedestrian deck

TO MAIN CAMPUS

natural
as main s

Upland
Hill R
serve
major
trian

realign Garnet Street parallel to ravine for expansion to Isle Royal property

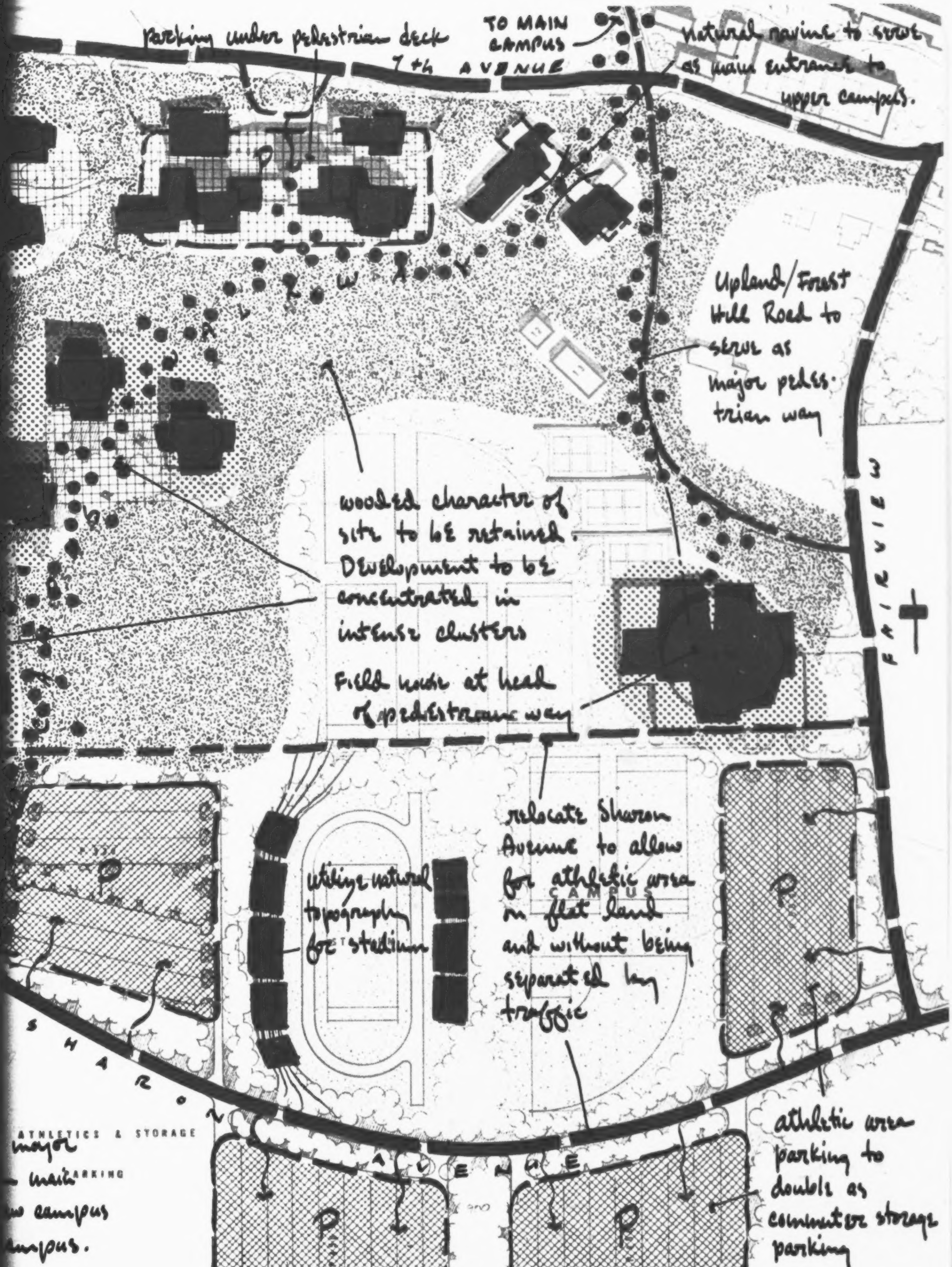
wooded character of site to be retained. Development to be concentrated in intense clusters

Field house at head of pedestrian way

utilize natural topography for stadium

relocate Sharon Avenue to allow for athletic area on flat land and without being separated by traffic

reserve opportunity for major pedestrian link between main campus to potentially new campus via Research / Athletic campus.


parking under pedestrian deck
TO MAIN CAMPUS
7th AVENUE
natural ravine to serve as main entrance to upper campus.
PARKWAY
Upland/Forest Hill Road to serve as major pedestrian way
wooded character of site to be retained. Development to be concentrated in intense clusters
Field house at head of pedestrian way
FAIRVIEW
P
relocate Sharon Avenue to allow for athletic area on flat land and without being separated by traffic
utilize natural topography for stadium
CAMPUS
P
SHARON
ATHLETICS & STORAGE
major
main PARKING
campus
campus.
AVENUE
P
P
athletic area parking to double as commuter storage parking

implementation

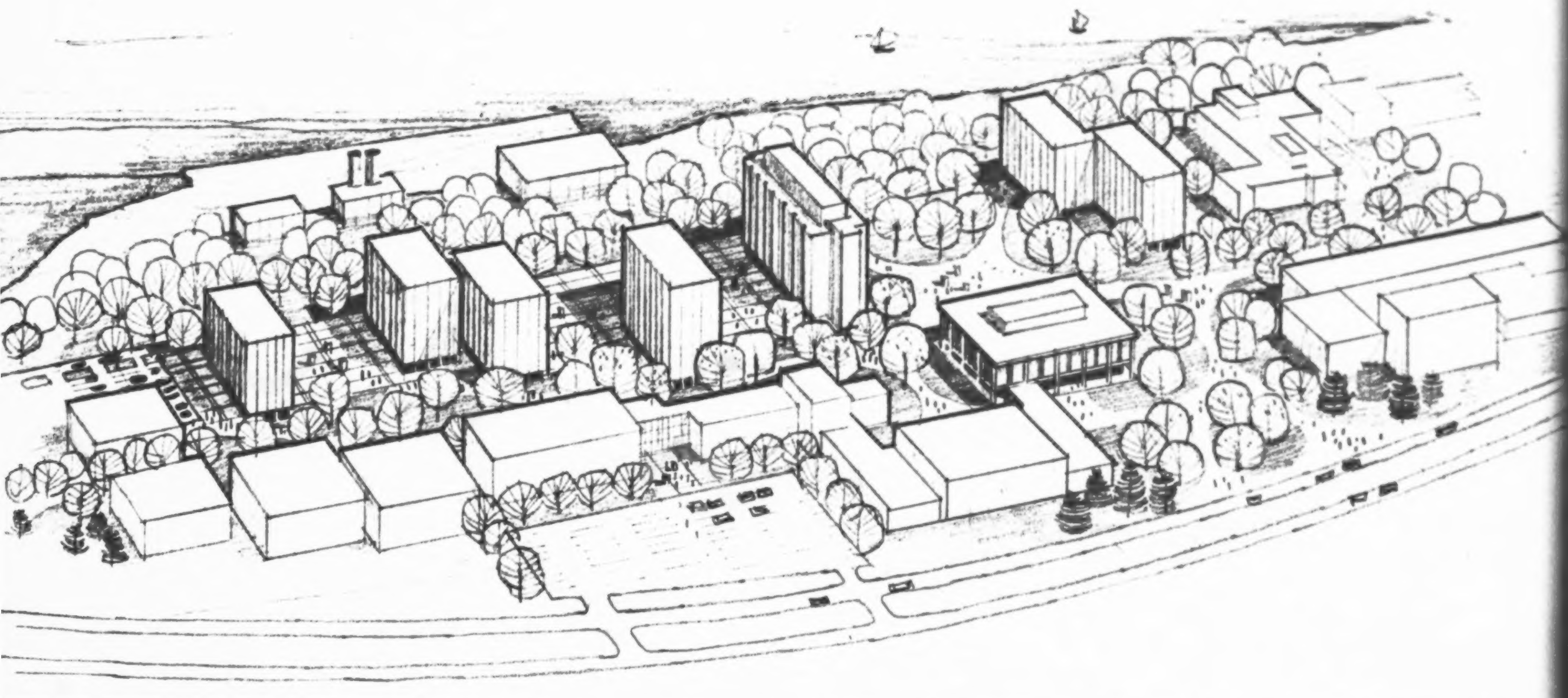
To implement the proposed concept, the University must correlate the various segments of the plan and take full advantage of every potentiality.

Highway Location—The highway has determined the University's development pattern in the past and will continue to do so in the future. A concerted and well-organized effort to gain community support and acceptance of the proposed realignment is an essential ingredient of the plan. The physical form that the highway takes must be viewed as a part of the campus environment and should, therefore, be compatible with it.

Community Relationship—The edges of a campus are important to its proper functioning and organization. The University, to assure the potentials of the plan, will have to concern itself with the development of the lands along its perimeter to encourage and support appropriate uses and projects. Certain parcels, essentially within the campus orientation, should be acquired for University development. Long-term lease arrangements for compatible development of University land might be explored to assure a high degree of control of such uses as campus shops proposed for the west end of the campus. Of particular concern is the slope of land between the lower and upper portions of the campus. The University will have to pursue the realization of the housing potential of this slope.

Architectural Implications—While the plan does not propose to dictate architectural requirements, it strives to provide a degree of guidance to assure that individual buildings and projects will be compatible parts of a total framework and thereby provide an essential degree of order and continuity. The plan proposes that buildings be planned as parts of complexes rather than as individual structures. Their relationship to parking concentrations must be honored to avoid a segmented, disjointed and inefficient parking pattern. Careful attention to the suggested vertical scale must be given or the potential for a 9,000-student campus will be destroyed. The increased height invites architectural concepts which respect an appropriate scale of relationship between the structures and individual persons. The use of brick as a unifying and warm architectural element is encouraged. If the potential of the valley as a structuring element for the campus is to be realized, the concept of a perpendicular arrangement of buildings along the northern edge must be honored.

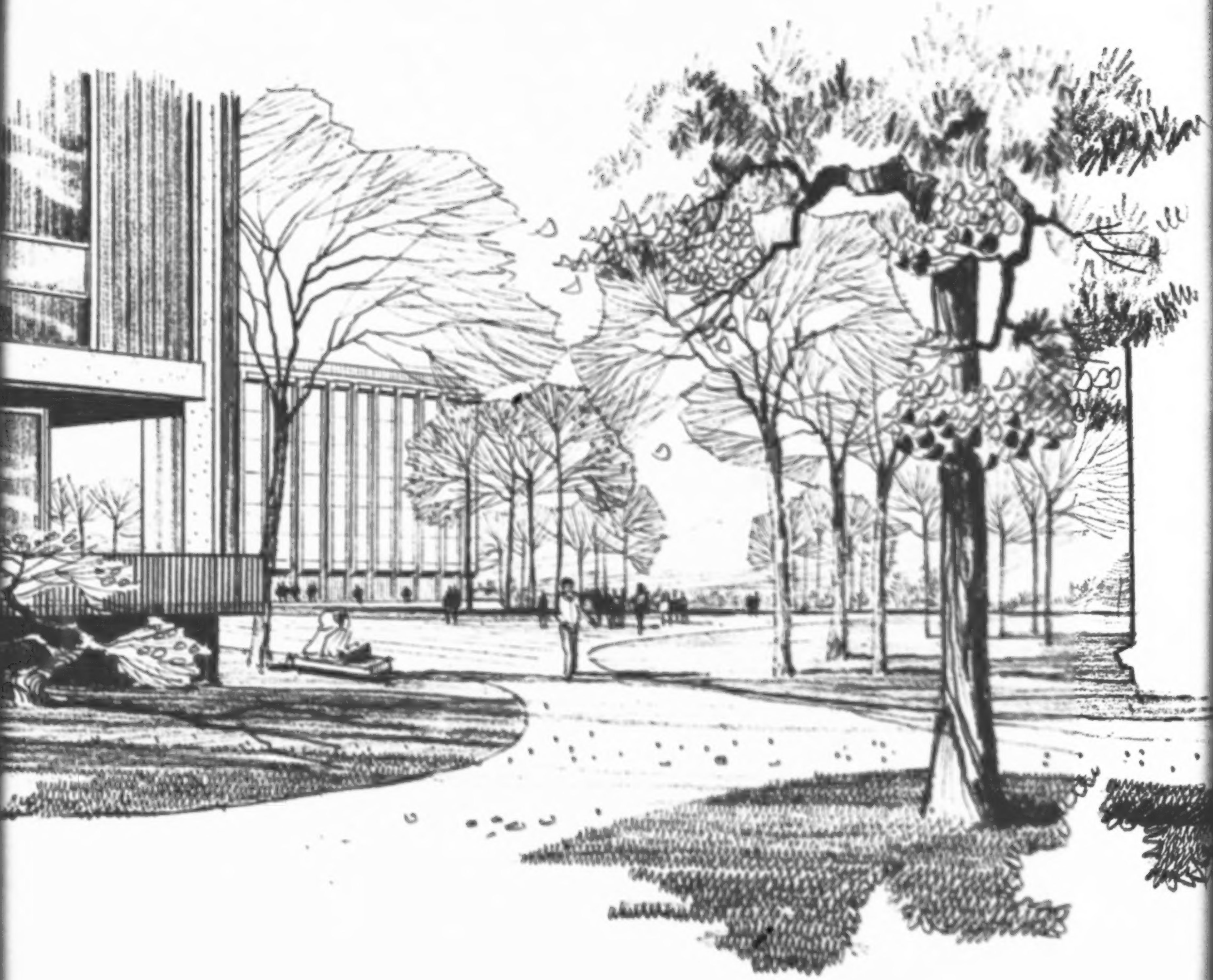
aerial sketch of future academic area



character sketch of future open space north of library >

open space character
between Douglass Houghton and Wadsworth Halls

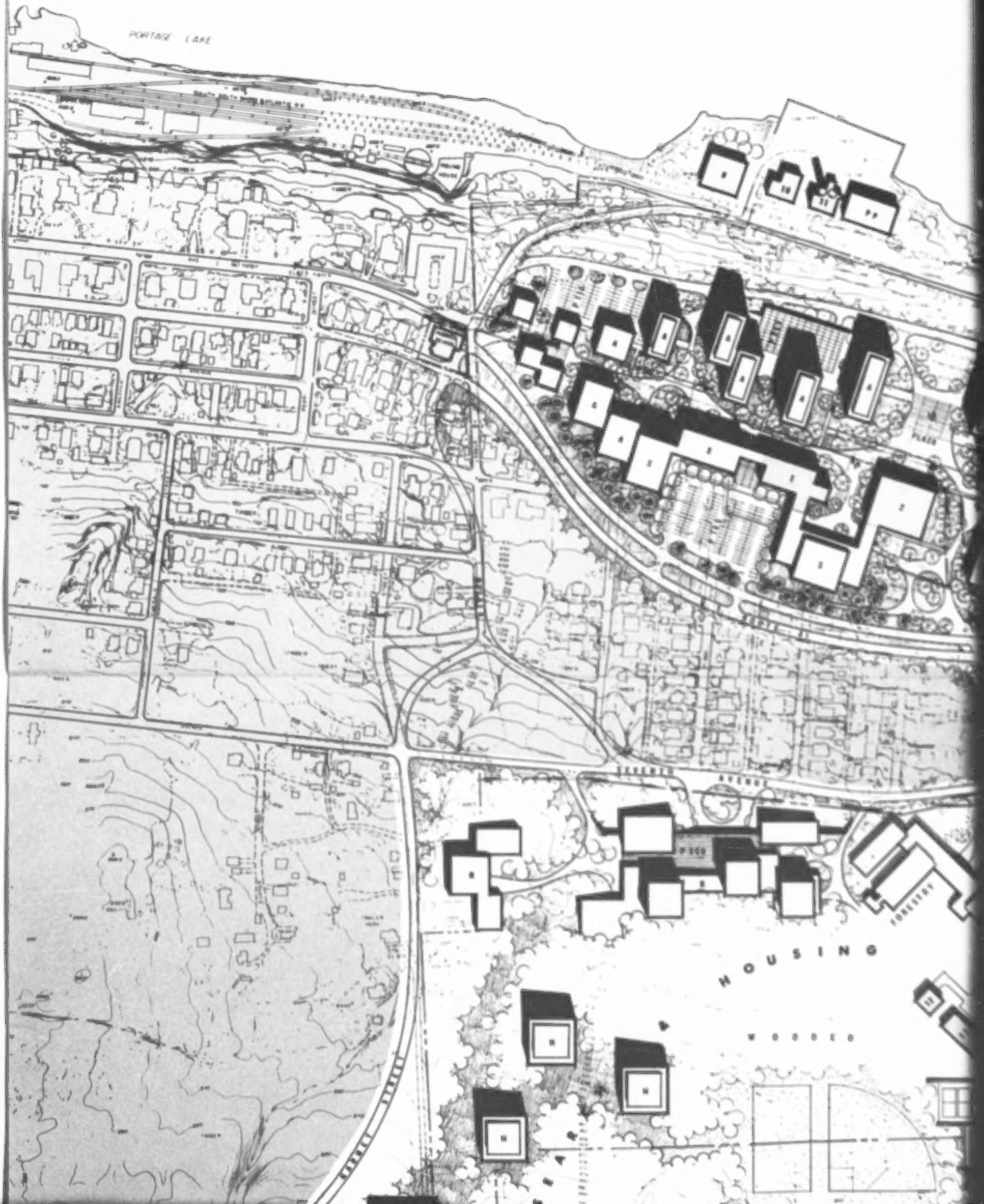
The Campus Landscape—Although the guidelines for architectural development must of necessity be sufficiently flexible to allow for the unforeseen conditions of the future, the general landscape of the campus can receive immediate and definitive study as well as development. A comprehensive study of walkway patterns, lighting, campus identification and planting can produce early and specific recommendations for action. As the open space is landscaped through a phased program, it will contribute a large measure of order and unity to the entire campus.

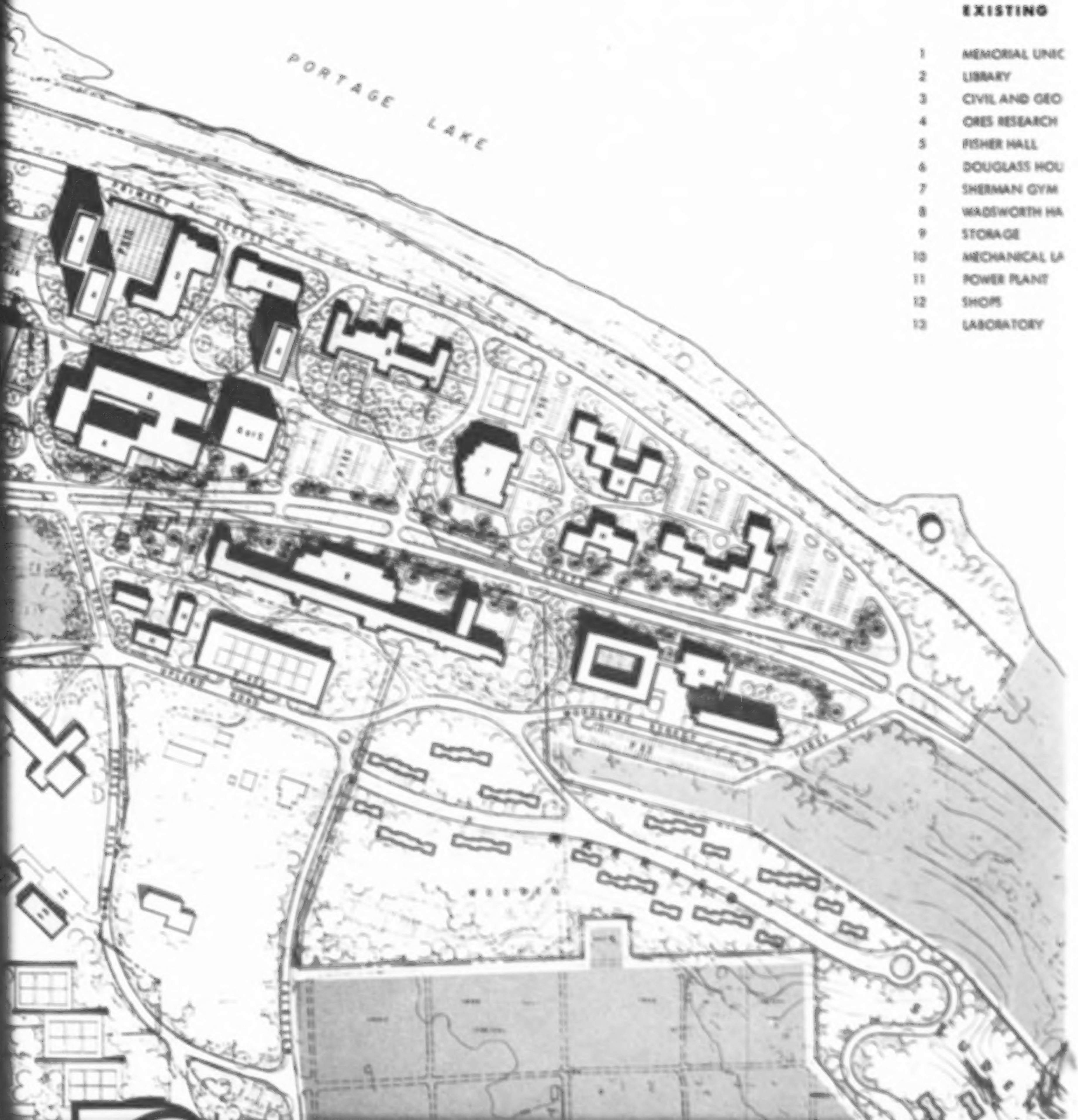


Statistical Summary of the Plan

	EXISTING 1965-66	PROJECTED 1975-76		PLANNED		
				to remain	new	total
enrollment:	3,472	8,610			9,000	
building space:						
instructional	473,780 sq. ft.			229,300	1,607,570 sq. ft.	1,917,770 sq. ft.
research	34,240					
administration	53,910					
library	80,900			80,900		
auditorium	—				52,350	52,350
athletic	*54,800			54,800	169,000	223,800
service	35,195			28,395	23,200	51,595
	732,825 sq. ft.	@ 250 sq. ft./st. =	2,152,500 sq. ft.	393,395 sq. ft.	1,852,120 sq. ft.	2,245,515 sq. ft.
union	66,745	(allowance)	150,000	66,745	86,400	153,145
housing—resident	365,070	75% @ 250 sq. ft./st. =	1,614,375	365,070	824,000	1,189,070
housing—married	153,012	10% @ 700 sq. ft./st. =	602,700	153,012	62,200	215,212
	584,827 sq. ft.		2,367,075 sq. ft.	584,827 sq. ft.	972,600 sq. ft.	1,557,427 sq. ft.
parking:						
visitors/faculty/staff	373 spaces	@ 1:1	1,291 spaces		1,800 spaces	
students	1,058	resident @ 1:4	1,614		2,700	
		married @ 1:1	861			
		commuter @ 1:1	1,292			
	1,431 spaces		5,068 spaces		4,500 spaces	

*on-campus facilities only.


PORTAGE LAKE
PLAZA
SEVENTH AVENUE
POOL
FORESTRY
HOUSING
&
WOODED



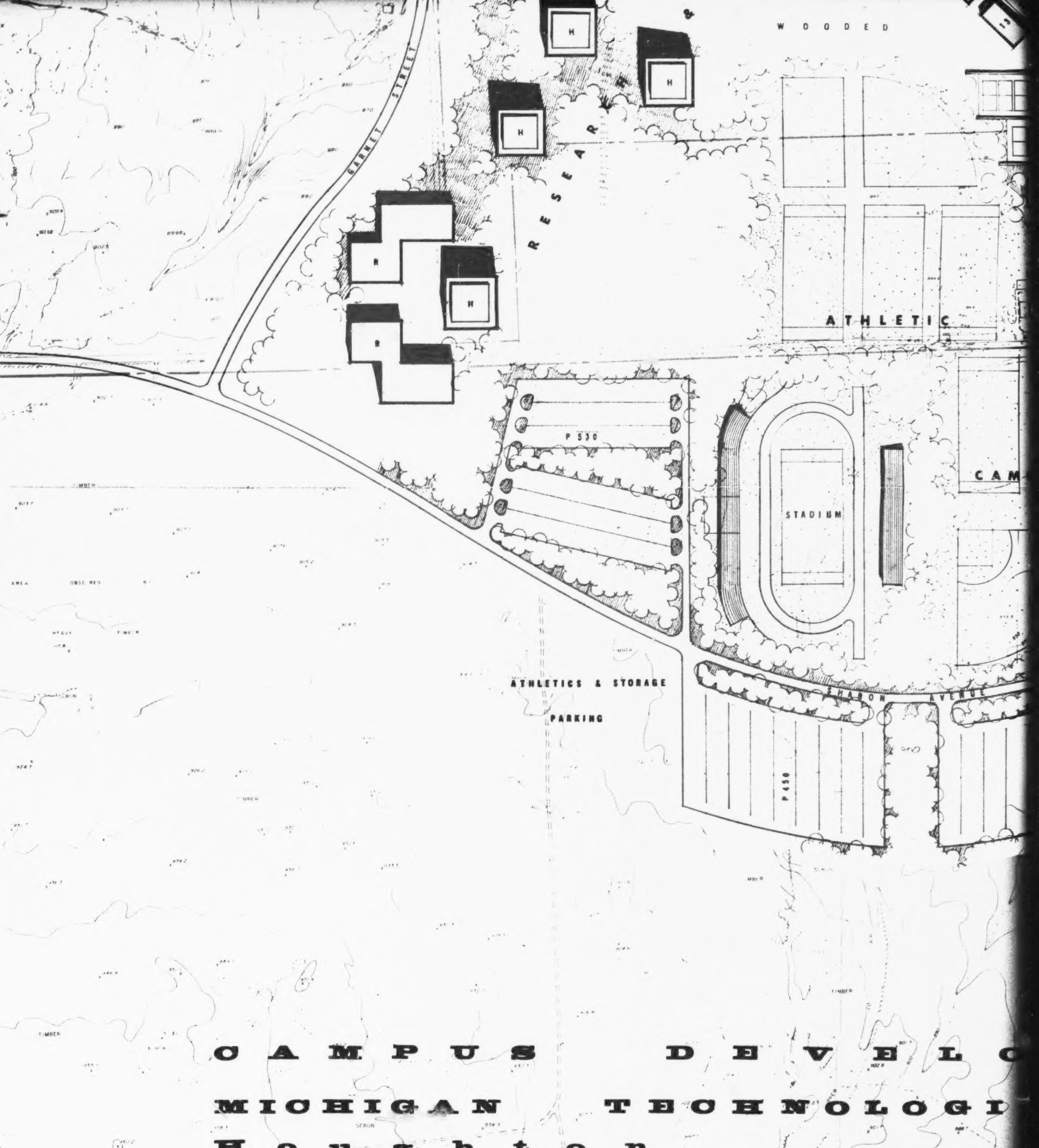
EXISTING

1	MEMORIAL UNI
2	LIBRARY
3	CIVIL AND GEO
4	ORES RESEARCH
5	FISHER HALL
6	DOUGLASS HOU
7	SHERMAN GYM
8	WADSWORTH HA
9	STORAGE
10	MECHANICAL LA
11	POWER PLANT
12	SHOPS
13	LABORATORY

	EXISTING
1	MEMORIAL UNION
2	LIBRARY
3	CIVIL AND GEOLOGY
4	ORES RESEARCH
5	FISHER HALL
6	DOUGLASS HOUGHTON HALL
7	SHERMAN GYM
8	WADSWORTH HALL
9	STORAGE
10	MECHANICAL LAB.
11	POWER PLANT
12	SHOPS
13	LABORATORY

	PROPOSED
A	ACADEMIC
H	HOUSING
R	RESEARCH
S	SPECIAL AUDITORIUM UNION EXPANSION ADMINISTRATION MUSEUM ETC.
PP	POWER PLANT
P	PARKING
ATH	ATHLETICS & HOCKEY STADIUM

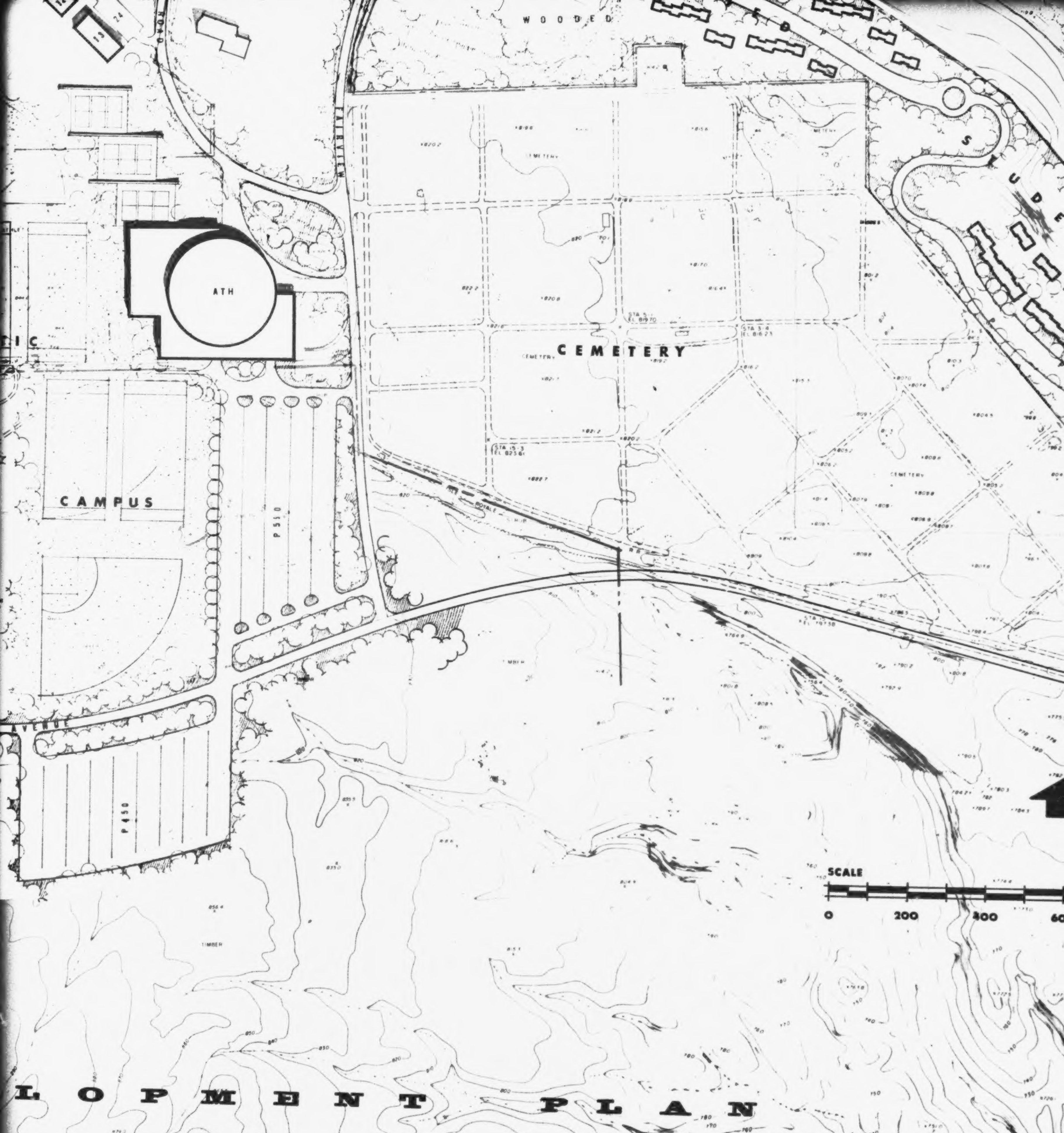
FIRST ST.
P
S T U D


WOODED
GARNET STREET
RESEARCH
H
R
ATHLETIC
STADIUM
P 530
P 450
CAM
ATHLETICS & STORAGE
PARKING
SHARON AVENUE
TIMBER
SCRUB
CULTIVATED
HEAVY TIMBER
AREA OBSCURED
ABANDONED
STA 15-6

CAMPUS DEVELO

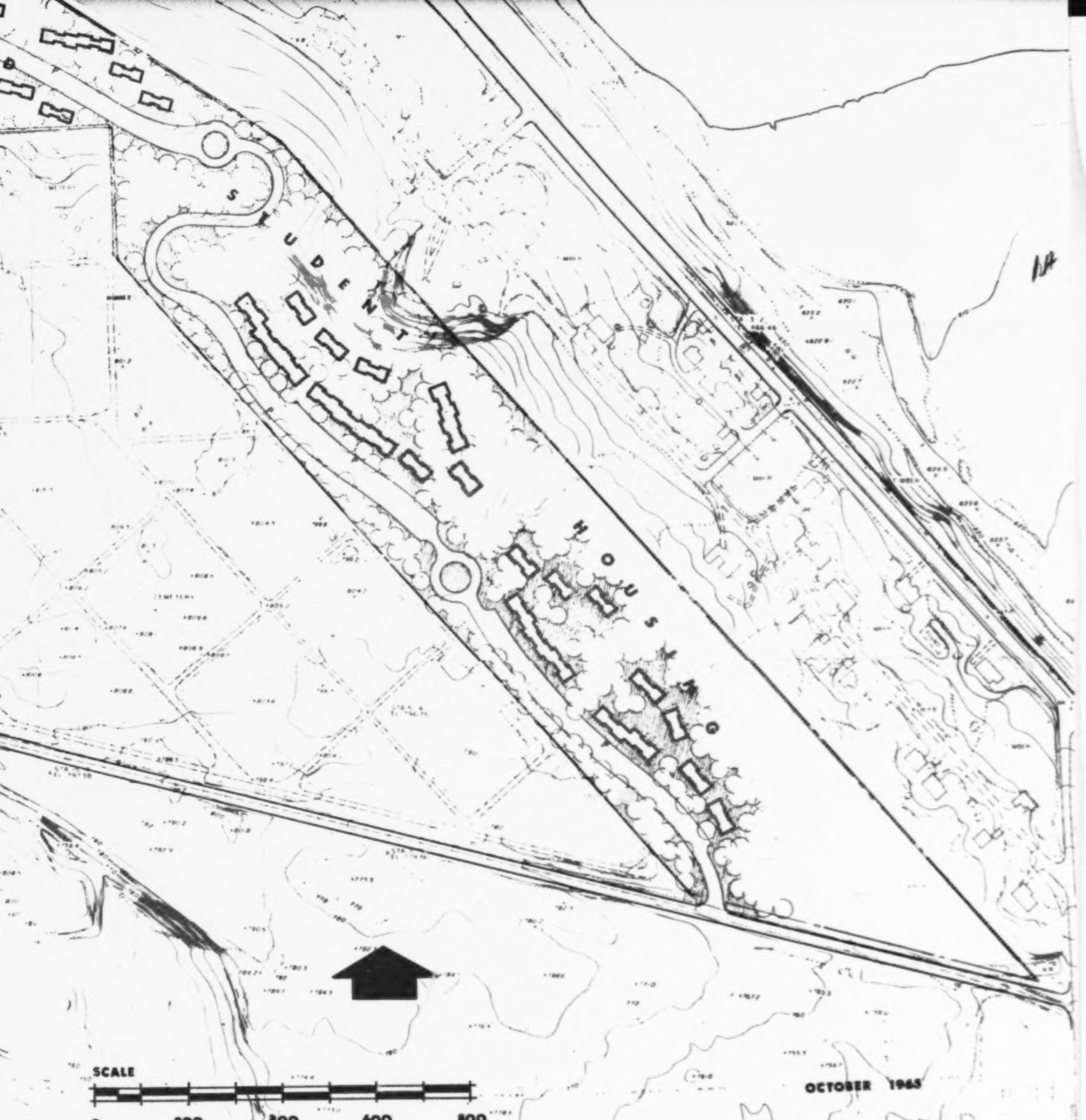
MICHIGAN TECHNOLOGI

Houghton


WOODED
ROAD
FAIRVIEW
ATH
CEMETERY
CAMPUS
P 510
P 450
AVENUE
TIMBER
SCALE
0
200
400

LOPMENT PLAN
GICAL UNIVERSITY
Michigan

Johnson, Johns


STUDENT HOUSING
CEMETERY
SCALE
0
200
400
600
800
OCTOBER 1965

Johnson, Johnson & Roy/inc. *landscape architects*

credits

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